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## DISEASES CAUSED BY BACTERIA AND FUNGI

White, F. & McDonald, I. (1961). **Some observations on an outbreak of staphylococcal mastitis in a dairy herd.**—J. comp. Path. 71, 159-170. 3122

A report of studies of monthly milk samples from each quarter of every cow and heifer from the peak onwards of an extensive outbreak of mastitis associated with penicillin-resistant coagulase-positive staphylococci. A total of 214 clinical cases occurred between 1956 and 1959. Although clinical cases fell after November 1957, coagulase-positive staphylococci in milk samples and reactions to a modified Whiteside test remained relatively constant. The outbreak followed much the same course amongst heifers at first calving although they had been kept strictly apart from the main herd. Procedures adopted to control the outbreak were not applied to them but clinical cases amongst them also declined.

—A. ACKROYD.

Fratta, I. & Mann, P. H. (1960). **Bacteriophage typing of staphylococci isolated from various species of domestic and laboratory animals.**—Canad. J. comp. Med. 24, 270-272. 3123

Since all coagulase-positive staphylococci are potential pathogens, a study was made of *Staphylococcus aureus* strains from domestic and laboratory animals. These were phage-typed with bacteriophages used in typing staphylococci isolated from man.

Many of the animal strains had phage patterns similar to those of human strains, and identification of *Staph. aureus* cultures, regardless of source, was clarified by this technique.

It is suggested that, until a more definite method becomes available, phage-typing of animal strains be standardized utilizing the International Basic Set of Phages, to enable a better comparison of results from different laboratories.—R. V. L. WALKER.

Johnson, J. E., Jr., Cluff, L. E. & Goshi, K. (1961). **Studies on the pathogenesis of staphylococcal infection. I. The effect of repeated skin infections.**—J. exp. Med. 113, 235-248. 3124

Goshi, K., Cluff, L. E., Johnson, J. E., Jr. & Conti, C. R. (1961). **Studies on the pathogenesis of staphylococcal infection. II. The effect of non-specific inflammation.**—Ibid. 249-257. 3125

Goshi, K., Cluff, L. E. & Johnson, J. E., Jr. (1961). **Studies on the pathogenesis of staphylococcal infection. III. The effect of tissue necrosis and antitoxic immunity.**—Ibid. 259-270. 3126

Conti, C. R., Cluff, L. E. & Scheder, E. P. (1961). **Studies on the pathogenesis of staphylococcal infection. IV. The effect of bacterial endotoxin.**—Ibid. 845-860. 3127

I. Repeated infection of the skin of rabbits with staphylococci increased its susceptibility, with the development of delayed hypersensitivity to the staphylococcus.

II. Inflammation was produced in the skin of rabbits by thermal, chemical, bacterial and immunological injury. Inflamed areas were more susceptible to staphylococci than normal skin.

III. Necrotic burns in rabbits were much more susceptible to coagulase-positive, haemolytic staphylococci than normal skin, but were not susceptible to non-pathogenic staphylococci. New necrotic burns produced 30-100 days after the first were immune to staphylococci, however, although the sensitivity of the normal skin of resistant rabbits was no different from that of controls. The serum of resistant rabbits contained high antibody titres to the alpha haemolysin.

IV. Intracutaneous and intravenous injection of pyrogenic, non-lethal doses of *E. coli* endotoxin increased the infectivity

of pathogenic (but not non-pathogenic) staphylococci in rabbit skin, characterized by accelerated multiplication at the site of inoculation and by the production of necrosis and haemorrhage locally.

The infectivity of staphylococci in skin of endotoxin-treated rabbits could be suppressed by antibody to staphylococcal alpha-haemolysin.

The effect of endotoxin upon leucocytes was probably responsible for its influence upon staphylococcal infection.—M.G.G.

Boyer, F. & Lamensans, A. (1961). Action du jeûne et de la cortisone sur la sensibilité de la souris à l'infection staphylococcique. Utilisation en chimiothérapie. [**Effect of fasting and cortisone on the susceptibility of mice to staphylococci.**]—Ann. Inst. Pasteur 100, 814-818. [Summary in English.] 3128

Mice allowed neither food nor water for 30 hours, and injected s/c with cortisone within 24 hours before infection were highly susceptible to staphylococci.—M.G.G.

Richter, O., Kleinschroth, E., Gruber, R. & Haugg, G. (1961). Erfahrungen mit dem Schalm-Test bei der Kannenmilchuntersuchung im Rahmen der Eutergesundheitskontrolle. [**The California mastitis test for the examination of churn milk samples.**]—Berl. Münch. tierärztl. Wschr. 74, 127-130. [Summary in English.] 3129

**Cultural and microscopic examination of milk samples from each of 8,357 cows in 983 herds revealed staphylococci or streptococci or a high cell count in 582 herds. Churn milk samples from 503 (86.4%) of these 582 herds were positive to the California test. On the other hand, 214 (30%) of the 717 herds positive to the California test of churn milk were negative to cultural and microscopic examination of individual milk samples.**

—M.G.G.

Vuković, V. (1961). Prilog poznavanju ždrebećaka. [**Strangles in Sarajevo during 1952-1959.**]—Veterinaria, Sarajevo 10, 125-128. [In Croat.] 3130

Strangles was diagnosed in 114 of 1,853 horses examined during 1952-59 in Sarajevo. In nine the infection was localized in the mesenteric lymph nodes. Of these nine, five died and four recovered after treatment with Lugol's solution.—E.G.

van Gils, J. H. J. (1961). Spiernecrose bij een varken. [**Necrosis of muscles in pigs.**]—Tijdschr. Diergeneesk. 86, 595-597. [In

Dutch. Summaries in English, French and German.] 3131

A pure culture of Group L streptococci was isolated from a necrotic portion of the longissimus dorsi muscle of a pig. [See also V.B. 31, 892.]—R.M.

Ando, K., Akaike, Y. & Azuma, R. (1961).

**Identification of Bacillus anthracis by means of  $\gamma$  bacteriophage.**—Bull. Nat. Inst. Anim. Hlth, Tokyo No. 41 pp. 37-41. [In English. Summary in Japanese.] 3132

All of 68 strains of *B. anthracis* (virulent, attenuated, unencapsulated non-sporulating and mucoid variants) were sensitive to the  $\gamma$  bacteriophage isolated by Brown, but none of 217 strains of anthracoid bacillus was sensitive.—A. ACKROYD.

Isopescu, I., Grăsoiu, G. & Dănescu, A. (1961).

Studiul unor factori care influențează stabilitatea imunității anticărbunoase. Nota a II-a. [**Factors influencing immunity to anthrax. II.**]—Lucr. Inst. Pasteur București 5, 223-227. [In Roumanian. Summaries in French, German and Russian.] 3133

Production of immunity in g.pigs, inoculated with non-encapsulated oedemato-genous anthrax vaccine Strain 1190R, appeared to be adversely affected by adrenaline, histamine, pilocarpine, deoxycortone and specific bacteriophages W or E.—E.G.

Isopescu, I., Grăsoiu, G. & Burducea, O.

(1961). Date asupra persistenței *B. anthracis* — tulpina 1190R în organismul cobailor. Decelarea prin marcarea cu izotopi radioactivi ( $P^{32}$ ) și prin metode bacteriologice. [**Persistence of *B. anthracis* in the body of guinea-pigs. Demonstration by  $P^{32}$ -labelling and bacteriologically.**]—Lucr. Inst. Pasteur București 5, 249-258. [In Roumanian. Summaries in French, German and Russian.] 3134

Anthrax spores of Strain 1190R labelled with  $P^{32}$  and injected s/c were demonstrable in the organs for up to 40 days radiologically and up to 60 days bacteriologically.—E.G.

Christiansen, M. J. (1961). Häufigkeit und Ursachen von Neuinfektionen tuberkulosefreier Rinderbestände in Dänemark. [**Incidence and causes of tuberculous re-infection in cattle herds in Denmark.**]—Mh. VetMed. 16, 281-283. 3135

Bovine TB. was eradicated in Jutland in 1952. The causes of re-infection in 915 herds towards the end of the eradication campaign were, in order of importance: infected pasture

or drinking water; purchase of infected animals; tuberculous human beings; tuberculous neighbouring herds; infected non-reactors; other species of domestic animals; dairy by-products; mating with tuberculous bulls; meat and bone meal; and transport.

—M.G.G.

George, J. T. A. & Payne, D. J. H. (1961).

**Tuberculosis from T.T. milk, with a note on the frequency of *Brucella abortus* in consumer milk.**—Mon. Bull. Minist. Hlth Lab. Serv. 20, 99-102. 3136

Two cases of tuberculous cervical adenitis in children in a village and routine biological testing showed that the school milk although from a tuberculin tested herd was infected. Heaf tests were positive in another 8 out of 44 children. Thirty-one of the 128 cattle were positive reactors. This report, two further reported breakdowns in attested herds and the occurrence of *Brucella abortus* in 7.8% of consumer milk in the area emphasize the need for tighter control of the safety of milk rather than the progressive relaxation which appears to be the current policy.

—A. ACKROYD.

Nassal, J. (1961). Ergebnisse und Probleme der aviären Tuberkulose des Rindes. [**Avian tuberculosis in cattle.**]—Berl. Münch. tierärztl. Wschr. 74, 210-214. [Summary in English.] 3137

Pulmonary, intestinal and maxillary lymph nodes were obtained from 357 cattle suspected of infection with avian type tubercle bacilli. Avian type bacilli were isolated from 192 (54%), 7 of which had severe generalized TB, and 123 tuberculous foci.—M.G.G.

Moro S., M. (1957). Investigación preliminar de la tuberculosis en alpacas. [**Preliminary survey of tuberculosis in alpacas in Peru.**]—Rev. Fac. Med. vet., Lima 12, 135-137. [Summary in English.] 3138

Tuberculin was injected i/d into 390 alpacas and s/c into 60. None gave a positive reaction.—M.G.G.

Westphal, W., Dickel, H. & Prange, H. (1961). Untersuchungen von Schweinelymphknoten mit tuberkuloseverdächtigen Veränderungen. [**Examination of pig lymph nodes with suspected tuberculous lesions.**]—Arch. Lebensmittelhyg. 12, 25-31. 3139

In 73 of 9,514 slaughtered pigs lymph node lesions were present, 58 of which were due to tuberculosis. Avian type bacilli were isolated from 32, human type bacilli from one.

In five cases the lesions were due to "atypical" mycobacteria and in ten to various other bacterial or parasitic causes.—E.G.

Ferris, D. H., Beamer, P. D., Alberts, J. O. & Trainer, D. (1961). **Tuberculosis in transported deer—a case report.**—J. Amer. vet. med. Ass. 138, 326-328. 3140

TB. occurred in deer sent to a deer farm in Illinois from a licensed Wisconsin deer farm. Attention is drawn to the importance of transported animals as a source of infection for man and for domestic and wild animals and for the need for certificates of health of deer and other wild animals prior to shipment.

—A. ACKROYD.

Choquette, L. P. E., Gallivan, J. F., Byrne, J. L. & Pilipavicius, J. (1961). **Parasites and diseases of bison in Canada. 1. Tuberculosis and some other pathological conditions in bison at Wood Buffalo and Elk Island National Parks in the fall and winter of 1959-60.**—Canad. vet. J. 2, 168-174. [Summary in French. Authors' summary modified.] 3141

A total of 936 bison was slaughtered between November 1959 and January 1960. Tuberculosis was prevalent in bison at Wood Buffalo National Park. Of 1,116 animals tested with bovine tuberculin in October 1959, 13.5% reacted, and all reactors were disposed of.

TB. lesions were observed in 219 of the 436 animals slaughtered. Of these, 357 had been tested before slaughter and 135 were reactors. Lesions were found in 116 of the reactors but none was visible in the other 19. Of the other 103 animals with lesions, 58 had been tested and did not react. There were 31 cases of generalized TB.

TB. was not found in the Elk Island bison.

Metritis was noted in 9 bison and in 3 the tuberculin test had been positive. *Brucella* organisms were not recovered but bovine tubercle bacilli were isolated from a uterus and from one of two foetuses.

Orchitis was noted in 11 bulls at Wood Buffalo Park; 7 reacted to serological tests for brucellosis. The tuberculin test was positive in 4 cases and TB. lesions were found in all the bulls. *Brucella* was not recovered from 7 diseased testicles examined bacteriologically, although 6 of the 7 bulls were serologically positive. No orchitis was observed in Elk Island bison.

A policy based upon the tuberculin testing and the slaughter of reactors was initiated a

few years ago at Wood Buffalo Park, but under prevailing conditions, it is not expected that the disease will be eradicated.

Kubica, G. P. & Beam, R. E. (1961). **The arylsulphatase activity of acid-fast bacilli. II. The differentiation of *Mycobacterium avium* from the unclassified Group III nonphotochromogenic mycobacteria.** — Amer. Rev. respir. Dis. **83**, 733-736. [Summaries in French and Spanish. Authors' summary modified.] 3142

The authors studied arylsulphatase activity in 46 cultures of acid-fast bacilli, representing strains of *M. avium* and unclassified Group III non-photochromogens. Avian tubercle bacilli may be distinguished readily from Battey strains on the basis of their arylsulphatase activity following two weeks' incubation in the presence of substrate.

Ben David, B. (1960). Un caso di mastite gangrenosa a carattere epidemico in due greggi di pecore. [**Two outbreaks of gangrenous mastitis in sheep.**] — Clin. vet., Milano **83**, 103-106. 3143

The incidence of gangrenous mastitis was about 15 cases in each of two flocks of about 400 sheep when hand milking was practised. With the introduction of milking machines the incidence rose to 60 and over 80 respectively. Hygienic measures reduced morbidity and reversion to hand milking effectively controlled the outbreaks.—T.E.G.R.

Kucsera, G. (1960). Kísérletek a sertésorbáncellenanyagok kimutatására új szerológiai próbával. [**Serological demonstration of swine erysipelas antibodies.**]—Mag. állator. Lapja **15**, 452-454. [In Hungarian. Summaries in English and Russian.] 3144

Wellmann's 'culture-agglutination' or 'growth-inhibition' test is based on agglutination with inhibition of growth when pig serum containing erysipelas antibodies is added to cultures [see also *V.B.* **30**, 3798]. K. improved it by replacing preliminary heat sterilization of the pig serum with a chemical method (employing crystal violet and sodium azide). Of sera from 73 non-immunized supposedly susceptible pigs aged 3-4 months, 67 gave positive tests only when the concentration of serum in culture was 10% or more; 6 gave positive results at 5% serum conc. Sera from 104 pigs (of which 90 had been immunized) were also tested and after testing all were inoculated i/d with virulent erysipelas bacilli. From the general and local reactions to

inoculation, 20 were judged to be susceptible, 18 partly susceptible (local reaction only) and 66 immune. Of the 20 susceptible pigs, only 3 gave positive culture-agglutination tests at serum concentrations less than 7.5%, while all 18 partly susceptible pigs gave positive tests at 7.5 and 5% serum conc. Of the 66 immune pigs, 55 gave positive tests at serum conc. less than 5%.

The mouse-protection values of 13 commercial swine erysipelas immune sera paralleled the minimum positive serum concentrations in the culture-agglutination test. K. concluded that the test could be used to determine the susceptibility or immunity of pigs to erysipelas, providing that the same strain of erysipelas bacillus was used in the tests. [There is a German translation of this paper in *Acta. vet. Acad. Sci. hung.* **11**, 99-106 (1961).]—A. SEBESTENY.

Temper, K. (1961). Über das Vorkommen von *Listeria monocytogenes* bei not-und krankgeschlachteten Haustieren. [**Listeria monocytogenes in animals slaughtered in emergency.**] — Arch. Lebensmittelhyg. **12**, 1-4. 3145

Organs, lymph nodes and muscles from 100 horses, one mule, 62 cattle, 18 pigs and 150 sheep, slaughtered in emergency, were examined. Brain material from 6 sheep, two pigs and one ox was also examined. *L. monocytogenes* was isolated from the brains of five sheep and one pig and from the liver of one ox.—E.G.

Eremeev, M. N. & Stepanenko, N. D. (1961). [**Role of carriers in listeria infection in sable (*Mustela zibellina*).**]—Krolikovod. Zverovod. No. 4 pp. 23-24. [In Russian.] 3146

Seventeen carcasses were examined bacteriologically and *L. monocytogenes* was isolated in pure culture from two.—R.M.

Silverman, S. J., Elwell, L. & Kautter, D. A. (1961). **A mortality enhancing extract isolated from *Listeria monocytogenes*.**—J. Immunol. **86**, 669-674. [Authors' summary modified.] 3147

The injection of a crude extract prepared from *L. monocytogenes* reduced the resistance of mice, g.pigs, rabbits and rhesus monkeys to listeria infection. The resistance of mice to other bacteria, both Gram-positive and Gram-negative, was also impaired by the cell material. The extract was stable when held at temperatures up to 70°C. for 30 min. It was effective when administered before or

after infection or when injected by a route other than that used for challenge. Injection of the extract into g.pigs caused loss of weight, changes in body temperature, qualitative and quantitative alteration of the white blood cells (including monocytosis) and changes in serum lysozyme, properdin and complement.

Véron, M. (1961). *Pseudomonas pigmentés. [Pigmented Pseudomonas.]* — Ann. Inst. Pasteur Suppl. No. 6 pp. 16-42. 3148

Having studied over 100 pigmented *Pseudomonas* strains, the author defined 10 properties which appear to be characteristic of *Pseudomonas*, and also the characters which distinguish the two main species, *Ps. pyocyanea* and *Ps. fluorescens*.—M.G.G.

Buttiaux, R. (1961). *Pseudomonas non pigmentés et Achromobacter. [Non-pigmented Pseudomonas and Achromobacterium.]* — Ann. Inst. Pasteur Suppl. No. 6 pp. 43-58. 3149

Having studied 620 strains of *Pseudomonas* and 310 of *Achromobacterium*, B. proposed definitions distinguishing non-pigmented *Pseudomonas* from *Achromobacterium*.—M.G.G.

Page, L. A. (1961). *Experimental ulcerative stomatitis in king snakes.*—Cornell Vet. 51, 258-266. 3150

P. described and studied the condition of ulcerative stomatitis commonly called "mouth rot" in California king snakes (*Lampropeltis getulus californiae*). The material used was derived from an Ecuadorian king snake (*Lampropeltis doliata micropholis*). The cause of the infection was traced to an organism of the Pseudomonadidae tentatively placed in the genus *Aeromonas*. Only bacterial agents were recovered from the exudates. Other organisms identified were atypical strains of *Pseudomonas aeruginosa*, *Escherichia coli* and *Proteus vulgaris*. Of these only *Aeromonas* reproduced the disease in the traumatized mouths of previously healthy snakes. Attempts to cure the condition by local treatment with oxytetracycline, penicillin and streptomycin were unsuccessful. The disease, however, regressed when the mouths were treated with a solution of sodium methazine, 12.5 mg. per ml. The improvement started within two days and mouth cultures were negative. The exudates began to disappear but deep ulcers remained for several weeks. Within 30 days of treatment the

snakes appeared healthy and accepted live mice as food.—R. N. FIENNES.

Craplet, M. C. (1961). Action de la terramycine sur les poulettes atteintes de coryza. [*Terramycin therapy in coryza of fowls.*] — Bull. Soc. vét. Prat. 45, 142-146. 3151

Treatment was successful in 7 flocks given the antibiotic in the drinking water and in the food but not in 3 flocks to which it was given in the food only. Better and quicker results were obtained when the drug was injected [route not stated].—T.E.G.R.

Matthews, P. R. J. & Pattison, I. H. (1961). *The identification of a haemophilus-like organism associated with pneumonia and pleurisy in the pig.*—J. comp. Path. 71, 44-52. [Authors' conclusions modified.] 3152

The authors described the cultural characteristics, serological reactions and pathogenicity for pigs of an organism isolated from pigs with pneumonia and pleurisy. They concluded that the organism differs from *Haemophilus influenzae suis* and is a member of the *Haemophilus para-influenzae* group, probably the same as that already described by Pattison, Howell & Elliot [*V.B.* 28, 347].

Rogers, K. B. & Taylor, J. (1961). *Laboratory diagnosis of gastro-enteritis due to Escherichia coli.*—Bull. World Hlth Org. 24, 59-71. 3153

An account of the procedure in controlling an epidemic of *E. coli* gastro-enteritis in infants, the collection and examination of specimens, and the culture and serological and biochemical classification of the organism.

—M.G.G.

Weil, M. H. & Miller, B. S. (1961). *Experimental studies on therapy of circulatory failure produced by endotoxin.*—J. Lab. clin. Med. 57, 683-693. [Authors' abst. modified.] 3154

A vasopressor agent, adrenergic blocking agent, sympatholytic drug, and a corticosteroid hormone were used in the treatment of shock produced by the injection of *Escherichia coli* endotoxin into 82 adult dogs. The therapeutic agent was administered 15 min. after shock had occurred.

The vasopressor agent and corticosteroid hormones increased the period of survival and the number of survivors. Adrenergic blocking agent and sympatholytic drug decreased the survival period. Combined use of the vasopressor agent and the corticosteroid provided the longest survival periods and minimized injury, as was reflected in lesser elevation of

serum transaminase, less blood pH reduction, and maintenance of almost normal output of urine.

Pretreatment with corticosteroids or with adrenergic blocking drugs has been shown by others to protect against lethal effects of endotoxin. In the present experiments, corticosteroid was also effective for treatment of endotoxic shock. However, adrenergic blocking agent and sympatholytic drug were not beneficial after the onset of shock, whereas the judicious use of a sympathomimetic drug as a vasopressor agent did not reverse the shock state, but prolonged the survival period.

Ueda, S., Sasaki, S., Kabuto, M., Ninomiya, W. & Kajiwaru, N. (1961). [*Shigella flexneri* isolated from slaughtered cattle and swine.] — J. Jap. vet. med. Ass. 14, 145-146. [In Japanese. Summary in English.] 3155

*S. flexneri* 2b was found in mesenteric lymph node of one of 467 cattle, and *S. flexneri* 2a in the faeces of 2 of 216 pigs. —M.G.G.

Uziębło, B. (1961). Enzootia salmonelozy bydła dorosłego na terenie Zalewu Odrzańskiego. [Enzootic salmonellosis in adult cattle in the region of the river Odra, Poland.] — Med. Wet., Warszawa 17, 226-231. [In Polish. Summaries in English, French, German and Russian.] 3156

An account of recurrent outbreaks of *S. dublin* infection among cows and heifers grazing a communal pasture. Seven cows and two in-calf heifers, out of about 300, died in one village but calves were not affected. In an adjoining village two cows were affected and one of them died. On subsequent bacteriological examination of faeces of in-contact animals *S. dublin* was isolated from 6 cows, 1 in-calf heifer and 1 calf. —M. GITTER.

Anon. (1961). *Salmonella* organisms in animal feeding stuffs. — Mon. Bull. Minist. Hlth Lab. Serv. 20, 73-85. 3157

Because organic material used in animal feeding stuffs frequently contained salmonella organisms, the frequency of salmonella organisms in a variety of compound feeding stuffs was compared with their incidence in the raw ingredients of these foods. In 4,140 samples (1,284 raw ingredients, 1,742 meals or mashes and 1,114 pelleted foods) salmonella was present in 9.0% of raw ingredients, principally meat and bone meal (16.9%) and protein concentrate meal (18.7%), in 2.8% of finished meals and in 0.27% of pelleted foods.

Altogether 44 serotypes were isolated including one new type, *S. livingstone* and *S. senftenberg* being the commonest (*S. dublin*, *S. cholerae-suis* and *S. thompson* were not found). Plate counts were low, usually less than 10 salmonella per 100 g. Following the introduction of heat treatment of some animal protein ingredients by the manufacturers, the percentage of salmonella in 627 samples of protein concentrate meal was reduced to 4.9. In a subsidiary investigation on 493 samples of raw and finished feeding materials from 12 manufacturers, salmonella was isolated from an even larger proportion of all the products. —A. ACKROYD.

Stenberg, H. (1961). Rehut salmonellan lähtenä. [Feedstuffs as a source of salmonella infection in Finland.] — Finsk VetTidskr. 67, 347 & 349-361. [In Finnish. Summary in English.] 3158

From September 1959 to December 1960, 302 samples of feeds of animal origin were examined for salmonella. Salmonella was isolated from 24% of 131 samples of Finnish origin and from 10.5% of 171 samples of foreign origin. The types were *S. mission* (21 strains), *montevideo* (11), *vefle* (8), *typhimurium* (7), *anatum* (1) and *senftenberg* (1). In the period 1946-60 the salmonella types isolated from animals at the State Veterinary Medical Institute, Helsinki, were, in order of frequency, *S. typhimurium*, *dublin*, *montevideo*, *mission*, *enteritidis*, *cholerae-suis*, *tennessee* and *vefle*. The incidence of salmonella infection in the period 1950-60 was 4% in cattle, 0.7% in pigs, and 2.6% in fur-bearing animals. In 1960, 7.2% of 469 chickens yielded salmonella. —M.G.G.

Dózsa, I. (1961). A háziveréb (*Passer d. domesticus*), mint *Salmonella typhimurium*-reservoir. [The sparrow as host of *Salmonella typhimurium*.] — Mag. állator. Lapja 16, 144-145. [Summaries in English and Russian.] 3159

In Budapest Zoo strict control measures for the elimination of *S. typhimurium* infection in birds failed. Attention was then directed to the sparrow (*Passer domesticus*) as a possible carrier. In 266 captured sparrows, *S. typhimurium* was isolated from the liver and intestinal tract of 52 birds and *S. anatum* from the intestinal tract of one bird. Of the infected birds 47 were captured in March, when the birds tended to crowd into the capital from the outskirts, while only 5 infected birds were found amongst those captured during

April-September, when most of the birds invaded the rich grain fields and pig fattening plants of the outskirts, and only the "established" sparrows remained in the capital.

—A. SEBESTENY.

Sojka, W. J. & Gitter, M. (1961). **Salmonellosis in pigs with reference to its public health significance.**—Vet. Rev. Annot. 7, 11-28. 3160

In reviewing the literature, the authors have drawn on their own experience of porcine salmonellosis in the United Kingdom.—R.M.

Cherkasskii, E. S. & Sorina, S. E. (1961). [**Salmonellosis in nutria.**]—Vestn. sel'skokhoz. Nauki No. 4 pp. 99-101. [In Russian. Summaries in English, French and German.] 3161

Severe outbreaks occurred occasionally. On one fur farm a quarter of the nutria died and there were over 200 cases of abortion and stillbirth. On another farm over 500 nutria (mostly youngstock) died. The commonest organism was *S. typhi-murium*, but two cultures of *S. enteritidis* Gärtner and one of *S. typhi* were isolated. Experimental infection of nutria, mice and g.pigs was described. A polyvalent adsorbed vaccine was prepared. Of 16 nutria that had been inoculated 7.5 months previously, all resisted challenge with 500 million organisms of a salmonella isolated from nutria.—R.M.

Gusev, B. A. & Babicheva, A. J. (1961). [**Salmonella typhi-murium infection in rabbits.**]—Krolikovod. Zverovod. No. 5 pp. 19-20. [In Russian.] 3162

An illness lasting 2-5 days killed 1,100 rabbits on three rabbit farms during summer 1960. Nearly all the losses were among rabbits aged 1-3 months—only 1.8% were older. Focal lesions were present in spleen and liver. White necrotic foci were present in the wall of the appendix and sometimes the colon. There was catarrhal inflammation of stomach and small intestine. *S. typhi-murium* was isolated from organs and tissues. Cultures inoculated s/c killed rabbits after 3-5 days. Tetracycline antibiotics added to the food in doses of 5-10 g. a rabbit daily appeared to have no therapeutic action. Over 10,000 rabbits were inoculated with a polyvalent paratyphoid vaccine, but evaluation of its effectiveness was difficult.—R.M.

Ide, Y. & Takanami, M. (1961). [**Sensitivity of an agglutination test using paper electrophoresis, applied to Salmonella pullorum infection.**]—Bull. Nat. Inst. Anim. Hlth,

Tokyo No. 41 pp. 31-35. [In Japanese. Summary in English.] 3163

After electrophoretic runs on filter paper containing 25-40% moisture with chicken *Salmonella pullorum* antisera of various titres, fixation of malachite green stained cells of *S. pullorum* was obtained in 3 of the slower globulin components from sera the titres of which exceeded 1:50.—A. ACKROYD.

Hutt, F. B. & Crawford, R. D. (1960). **On breeding chicks resistant to pullorum disease without exposure thereto.**—Canad. J. Genet. Cytol. 2, 357-370. [Authors' summary modified.] 3164

Experiments were made to determine the validity of the conclusion that genetic resistance to *Salmonella pullorum* is associated with superior control of the chick's average body temperature during the first week of life.

In Rhode Island Reds, New Hampshires and their crosses selection for high early temperature in one line and for low temperature in the other was practised for two generations.

Two lines were thus differentiated, in one of which average chick temperature at one to six days of age was higher than that for the other line by 0.42°F. in the first generation and 0.59°F. in the second.

In four tests of these lines, one with the first generation and three with the second, using 799 chicks, the high-temperature stock were consistently more resistant to experimental inoculation with *S. pullorum* than the low-temperature stock. In three trials the chicks were given both the standard organism and the so-called X-variant form. With the lightest dosage used, mortality in the high-temperature line to three weeks of age was only 8.6%, against 40.7% in the other strain.

This is believed to be the first demonstration in animals that genetic resistance to a disease can be raised by selection on the basis of some indicator associated with genetic resistance without exposure to the disease.

Hill, C. H. & Garren, H. W. (1961). **Protein levels and survival time of chicks infected with Salmonella gallinarum.**—J. Nutr. 73, 28-32. [Authors' summary modified.] 3165

Increasing the protein level of diets from 10% to 20% resulted in progressively increased mortality of chicks from gallinarum infection. Mortality was not affected by the energy content of the diet, nor by the nature of the protein (soya bean or casein). Because increased mortality occurred whether the

organism was given orally or intramuscularly, it was concluded that the effect of increased protein did not depend on reaction between pathogen and diet in the intestine.

Geissler, H. & Bassiouni, A. (1961). S- und R-Formen von *Salmonella gallinarum* (S. pullorum) und ihre Beziehung zur Agglutinationsreaktion. [S and R forms of *Salmonella gallinarum* and *S. pullorum* in relation to the agglutination reaction.] — Berl. Münch. tierärztl. Wschr. 74, 111-113. [Summary in English.] 3166

Contrary to findings by van Dorssen and Roepke [*V.B.* 22, 1262] suspensions of R-forms of *Salmonella gallinarum* and *S. pullorum* agglutinated spontaneously and were therefore unsuitable for the preparation of antigen for the agglutination test. In addition R-forms were stated to be of a modified antigenic structure.

Roepke, in a note at the end of this paper, stated that in four outbreaks of pullorum disease in the Netherlands since 1948, diagnosis was possible with antigen F, prepared from a flock-specific rough variant but not with standard or variant antigen.—E.G.

Busch, W. & Krüger, W. (1961). Verschleppung von Brucellen durch Stiefel und Hände in der tierärztlichen Praxis. [Possibility of dissemination of brucella by veterinary practitioners.]—Mh. VetMed. 16, 303-306. 3167

On 6 separate occasions scrapings were taken from beneath the finger nails of a veterinary practitioner 10-60 min. after he had attended a cow aborting from brucellosis and washed his hands thoroughly with soap and water. In 2 cases antibodies to brucella developed in g.pigs injected i/p with the scrapings. In 13 of 20 cases samples taken from the roughly cleaned rubber boots worn by the practitioner were positive for brucella by culture and/or g.pig inoculation or staining.—M.G.G.

Moro S., M. (1957). Investigación preliminar de la brucelosis en alpacas. [Preliminary survey of brucellosis in alpacas.]—Rev. Fac. Med. vet., Lima 12, 130-134. [Summary in English.] 3168

Of 752 alpacas 2-7 years old submitted to the rapid plate test for brucellosis, 3 had an agglutination titre of 1:50, 13 had 1:25, and the rest gave no reaction. The 16 reactions were considered to be non-specific.—M.G.G.

Hajdú, Š. (1961). Etiológia hromadne sa vyskytujúcich epididymitíd baranov na Slovensku. [Aetiology of ovine epididymitis in Slovakia.] — Vet. čas. 10, 222-236. [In Slovak. Summaries in German and Russian.] 3169

Ovine epididymitis in Slovakia was considered to be due to a brucella-like organism, similar to that described in Australia in 1953 [*V.B.* 23, 2479]. Of 3,320 rams 190 had clinical symptoms, but 866 yielded positive c.f. tests. By the c.f. test it was not possible to differentiate brucella and brucella-like organisms. Antibody production was demonstrated also in experimentally infected rams.—E.G.

van Drimmelen, G. C. (1960). Control of brucellosis in sheep and goats by means of vaccination.—J. S. Afr. vet. med. Ass. 31, 129-138. 3170

Merino ewes and rams were vaccinated with either *Br. abortus* Strain 19, *Br. melitensis* Rev. 1 (Elberg), *Br. melitensis* Strain 5711, or with a killed adjuvant vaccine. Only the killed adjuvant vaccine produced marked lesions at the site of inoculation. Five of 49 vaccinated rams became infected after exposure compared with 16 of 21 non-vaccinated rams. The Rev. 1 (Elberg) vaccine seemed to give better results than the others.—W. J. BRINLEY MORGAN.

Kessel, R. W. I. & Braun, W. (1961). Relationships between phage susceptibility and colonial phenotype of *Brucella abortus*.—J. Bact. 81, 503-504. 3171

A mucoid variant with different reaction to acriflavine developed from a smooth strain of *Br. abortus* in medium containing penicillin. The phage susceptibility of the variant did not differ from that of the original strain.—M.G.G.

Jacob, K. (1961). Histopathologische Milz- und Leberbefunde bei der Melitensis-Brucellose der Schafe. [Histopathology of spleen and liver in sheep infected with *Br. melitensis*.]—Zbl. VetMed. 8, 451-460. [Summaries in English, French and Spanish. English summary modified.] 3172

The liver and spleen were examined bacteriologically and histologically in 25 of a group of 100 sheep, some of which were positive to the agglutination or to the allergic test or both. In these 25 animals *Br. melitensis* was cultivated from liver or spleen.

There were no macroscopic changes in the spleen or liver which were pathognomonic for brucellosis. Microscopically both organs showed an exudative and cellular inflammatory process which consisted largely of proliferation of reticulo-endothelial cells and the formation of typical granulomas.

Huddleson, I. F. (1961). **Emergence during growth of *Brucella* strains on dye-agar media of cells that show changes in sulfur metabolism.**—Bull. World Hlth Org. 24, 91-102. [Summary in French.] 3173

These studies were made to determine whether the biochemical and antigenic characteristics used for dividing the genus *Brucella* into *abortus*, *melitensis* and *suis* could be changed by lab. techniques other than animal inoculations and, if they occurred, whether such changes were mutations so that cells of one "species" could be changed into another.

Although cells of the different species could be adapted to grow on dye media that normally inhibited their growth, such changes were not considered to be mutations. The only detectable change in enzyme activity was in the enzyme that decomposed a sulphur-containing compound into  $H_2S$ . The other biochemical and antigenic properties were not changed.—W. J. BRINLEY MORGAN.

Ruiz Castañeda, M. (1961). **Laboratory diagnosis of brucellosis in man.**—Bull. World Hlth Org. 24, 73-84. 3174

An account of the collection of specimens, isolation, cultivation and identification of brucella, serological and intradermal tests, the blood picture in brucellosis, and the preparation of antigens for diagnostic tests.—M.G.G.

Carbrey, E. A. & Packer, R. A. (1961). **The detection of antibody against *Leptospira pomona* in composite herd milk samples.**—Amer. J. vet. Res. 22, 573-579. 3175

*L. pomona* has been implicated in 98% of outbreaks of leptospirosis in pigs and cattle. In the whey from bulk tank and can milk samples from cattle on 12 out of 30 ranches, antibodies against *L. pomona* were detected by the agglutination-lysis test. Comparison of data on blood and whey tests and histories of cows on 17 of the ranches indicated that a whey titre of 1:8 in the composite herd sample was the critical titre to be used in screening for leptospirosis. In milk from 2 herds with signs of active leptospirosis, whey titres of 1:256 and 1:512 were obtained.

Quarter milk sampling of cows with positive blood tests showed no significant differences between quarter whey titres in the same cow. —A. ACKROYD.

Babudieri, B. (1961). **Laboratory diagnosis of leptospirosis.**—Bull. World Hlth Org. 24, 45-58. 3176

A useful account of the techniques of demonstrating and isolating leptospira and of the different serological tests and culture media. A table lists the pathogenic serotypes and sub-serotypes.—M.G.G.

Mitchell, D., Boulanger, P., Smith, A. N. & Bannister, G. L. (1960). **Leptospirosis in Canada. V. Infection in cattle with a serotype of the 'hebdomadis' group.**—Canad. J. comp. Med. 24, 229-234. [Summary in French.] 3177

Numerous studies in Canadian cattle indicated that the predominant serotype was *Leptospira pomona*.

Recently in a herd outbreak of atypical mastitis, significant serological reactions were obtained against *L. sejroe*, but not against either *L. canicola* or *L. pomona*.

Clinical and laboratory studies of *L. sejroe* infection in cattle are described.

—R. V. L. WALKER.

Donker-Voet, J. (1961). Een onderzoek naar het voorkomen van *Leptospira pomona*-infecties als oorzaak van abortus bij het rund in Nederland. [***Leptospira pomona* not a cause of bovine abortion in the Netherlands.**] —Tijdschr. Diergeneesk. 86, 613-616. [In Dutch. Summaries in English, French and German.] 3178

A plate test for leptospirosis was performed on brucella-negative sera from 252 cows that had aborted. One serum reacted to *pomona* antigen: further tests showed that the titre to *pomona* was 1:100 but the titre to *icterohaemorrhagiae* was 1:3,000 and to *canicola* 1:1,000 (1:300 in a sample taken nine days later). All the other sera were negative. Other plate tests and agglutination-lysis tests of 105 slaughtered cows and on 965 blood samples submitted for routine brucellosis tests revealed one reaction to *icterohaemorrhagiae* at 1:10,000 and no reactions to *pomona* antigen.—R.M.

Turudić, V., Trbić, B., Kokanović, R. & Pejkovski, J. (1961). **Enzootija leptospiroze vojnih konja u selu Glogonj. [Leptospirosis in Yugoslav army horses.]**—Vet. Glasn. 14,

295-301. [In Croat. Summary in English.] 3179

During the late summer season 36 of 421 army horses which had been temporarily transferred to another district, developed clinical symptoms of leptospirosis and another 12, although without apparent symptoms, yielded positive agglutination-lysis titres against *L. pomona*, varying from 1:100 to 1:1,000,000. After removal of the horses from the village, no new cases were reported.

—E.G.

Liebermann, H. & Müller, M. (1961). Die Leptospireninfektion als Abortursache beim Schwein. [**Leptospiral abortion in swine.**]—Mh. VetMed. 16, 349-351. 3180

In Mecklenburg, antibody titres for *L. batavia*, *L. grippo-typhosa* and *L. ictero-haemorrhagiae* were demonstrated in sows in 8 herds where abortions had occurred.

—M.G.G.

Šebek, Z. (1961). Výsledky sérologického vyšetřování koz na leptospirosu. [**Serological examination of goats for leptospirosis in Czechoslovakia.**]—Vet. Čas. 10, 271-278. [In Czech. Summaries in English, German and Russian.] 3181

Details were given of serological examination for leptospirosis in 373 goats, of which 43 reacted with *L. sejroe*, 26 with *ictero-haemorrhagiae*, 16 with *grippo-typhosa*, 7 with *australis*, 6 with *pomona*, 5 with *bataviae*, 4 with *canicola*, 2 with *ballum* and one with *poi*. Of these, 55 yielded titres of 1:800 and higher. Antibodies were not demonstrable in goats less than one year old.—E.G.

Kushnir, M. M., Kaigorodov, P. I. & Zaitsev, A. G. (1961). [**Leptospirosis in silver-grey foxes and mink.**]—Krolikovod. Zverovod. No. 3 pp. 22-23. [In Russian.] 3182

In an outbreak on a fur farm, 97 foxes and 38 mink became ill. After penicillin treatment 61 foxes and 33 mink recovered. The type of leptospire was not determined.

—R.M.

Jull, D. J. & Heath, K. R. (1961). **The evaluation of a combined *L. canicola* and *L. ictero-haemorrhagiae* vaccine on hamsters and dogs.**—J. small. Anim. Pract. 1, 245-258. [Summaries in French, German and Spanish. Authors' summary modified.] 3183

Agglutinins and protective antibody were measured after injection of *L. ictero-haemorrhagiae* and *L. canicola* vaccines singly or combined into hamsters and dogs. Response

in both antibody titre and resistance to challenge was as good with the combined vaccine as with the single ones in both animal species. In dogs, the use of the combined vaccine would afford a good protection against natural infection.

Halaša, M., Krčmery, V. & Ladzińska, K. (1961). O účinkoch antibiotík na leptospíry. I. Leptospirostatický a leptospirocidný účinok jedenástich antibiotík na kmene *L. pomona* a *L. mitis*. [**Effect of antibiotics on *Leptospira pomona* and *L. mitis*.**]—Vet. Čas. 10, 279-288. [In Slovak. Summaries in English, German and Russian.] 3184

Nearly all of eleven antibiotics tested *in vitro* against *L. pomona* and *L. mitis* had a bacteriostatic effect, but only tetracyclines and particularly polymyxin were strongly bactericidal at low concentrations.—E.G.

Griner, L. A. (1961). **Enterotoxemia of sheep. I. Effects of *Clostridium perfringens* type D toxin on the brains of sheep and mice.**—Amer. J. vet. Res. 22, 429-442. 3185

Griner, L. A. & Carlson, W. D. (1961). **Enterotoxemia of sheep. II. Distribution of I<sup>131</sup> radioiodinated serum albumin in brains of *Clostridium perfringens* type D intoxicated lambs.**—Ibid. 443-446. 3186

Griner, L. A. (1961). **Enterotoxemia of sheep. III. *Clostridium perfringens* type D antitoxin titers of normal, nonvaccinated lambs.**—Ibid. 447-448. 3187

I. Lesions in the brains of lambs with natural and experimental acute and subacute enterotoxaemia produced by *Clostridium welchii* Type D toxin are described. No gross lesions were discernible in the acute form, but in the subacute, multiple bilateral symmetrical malacic foci and in both, microscopic foci of softening or liquefaction necrosis were found in the basal ganglia, thalamus, internal capsule, substantia nigra, subcortical white matter and cerebellum in most lambs. The lesions were characterized by vascular congestion, degeneration of endothelium and walls of the vessels, pronounced perivascular oedema and varying degrees of intercellular oedema. Pathological changes in the neurones and neuroglia appeared to be related to the increase in plasma transudate. Study of the chronological pattern of the encephalic lesions produced by Type D toxin in mice indicated that an initial increase in vascular permeability was followed by oedema, softening, liquefaction necrosis, and healing by glial scarring. It is probable that the signs of progressive drowsiness,

confusion, impairment of vision and generalized convulsions seen in acute enterotoxaemia are related to intracranial accumulation of plasma transudate.

II. Quantitative determinations, using radioactive iodinated human serum albumin, of plasma transudate in the brains of lambs killed by i/v inj. of *Cl. welchii* Type D trypsin-activated toxin, compared with paired controls, confirmed the histopathological observations of oedema in the brains of Type D intoxicated lambs. The primary action of *Cl. welchii* Type D toxin appears to be on the vascular system causing increase in permeability and the brain lesions are not due primarily to hypoxia.

III. Of 76 non-vaccinated lambs from 3 sources, 25 had *Cl. welchii* Type D antitoxin titres of 0.1 units/ml. or higher due probably to previous subacute enterotoxaemia. This finding of active antitoxin titres in otherwise normal lambs offers a possible explanation for some of the negative results obtained in earlier attempts to reproduce enterotoxaemia by i/v. inj. of filtrates of the intestinal contents of sheep dying of acute Type D enterotoxaemia.

—A. ACKROYD.

Gimeno, E. J. (1960). Contribución al estudio de diferencias antígenas entre el *Clostridium chauvoei* y el *Clostridium septicum*. [**Antigenic differences between *Cl. chauvoei* and *septicum*.**]—Rev. Fac. Cienc. vet. La Plata 2, 253-257. Discussion: p. 258. [Summary in English.] 3188

In tube agglutination tests both antigens gave positive reactions with homologous and heterologous immune serum. Agar precipitin tests gave negative results, which are briefly discussed.—T.E.G.R.

Pascu, L., Balaci, M., Petrovsky, M. & Grigoriu, N. (1961). Cercetări asupra unui vaccin contra anaerobiozei oilor, adsorbit pe hidroxid de aluminiu. [**An aluminium hydroxide adsorbed anticlostridial vaccine for sheep.**]—Lucr. Inst. Pasteur Bucureşti 5, 291-304. [In Roumanian. Summaries in French, German and Russian.] 3189

Adsorbed polyvalent clostridial vaccines were superior to non-adsorbed vaccines. Mixtures in various proportions of cultures of *Cl. welchii*, *Cl. oedematiens* and *Cl. septicum* were tested and it was concluded that *Cl. welchii* should predominate in the mixture. Two doses of 2 and 3 ml., respectively, at an interval of 12 days were preferable to a single dose of 5 ml.—E.G.

Laing, J. A. [Edited by.] (1960). **Vibrio fetus infection of cattle.**—FAO Agric. Studies No. 51. pp. 62. (Revised edit.) [Rome: Food and Agriculture Organization of the United Nations.] 3190

In this revised edition, much greater emphasis has been given to the differential cultural tests and the differentiation of 2 types of *V. fetus*. Other chapters deal with the epidemiology, symptoms, diagnosis, preparation of culture media, treatment and prevention and control of genital vibriosis. There is a useful list of references.

—W. J. BRINLEY MORGAN.

Firehammer, B. D. & Lovelace, S. A. (1961). **The isolation of *Vibrio bubulus* (Florent) from sheep.**—Amer. J. vet. Res. 22, 449-461. 3191

In no instance was *Vibrio fetus* isolated from the preputial mucus or semen of 134 rams in flocks naturally infected with vibriosis and in flocks without a history of abortions, but in 58 instances, strains of vibrio were isolated which were hydrogen sulphide-positive and catalase negative, had light growth in deep stab culture and tolerated 2.5% of sodium chloride. On the basis of physiological tests, these cultures appeared to be identical to 4 strains of *V. bubulus* of bovine origin obtained from France. It is suggested that vibrios of ovine origin which are physiologically comparable to *V. bubulus* should be so named. Vaginal cultures from some ewes which gave birth to normal lambs yielded *V. fetus* which was replaced within a few weeks by *V. bubulus*; others yielded *V. bubulus*. *V. fetus* was isolated from 5 ewes with stillborn or weak lambs. In a flock of 27 ewes held for 2 seasons on pasture heavily contaminated with *V. fetus*, no evidence of infection was seen. In cross-agglutination studies, there was little relationship between *V. fetus* and *V. bubulus* strains of ovine and bovine origin and few cross-agglutination reactions were obtained within the *V. bubulus* group.—A. ACKROYD.

Davies, M. E. (1961). **Growing bacterial resistance to antibiotics.**—Vet. Rec. 73, 429-430. 3192

D. compared the sensitivity in 1957, 1959 and 1960 of 7 bacterial species isolated from animals to some antibiotics in common use. Decrease in sensitivity was apparent especially of streptococci to streptomycin and of coliform bacteria, proteus and pseudomonas groups to the tetracyclines.—A. ACKROYD.

van der Schaaf, A., van Dorssen, C. A., Donker-Voet, J., Frik, J. F. & van Maanen, P. H. A. M. (1961). Overzicht der onderzoeken van het uit de praktijk ingezonden ziektemateriaal over het jaar 1959. [Survey of examinations of specimens in the Institute for Bacteriology, Veterinary Faculty, Utrecht, in 1959.] — Tijdschr. Diergeneesk. 86, 525-536. [In Dutch. Summaries in English, French and German.] 3193

The following were among the main diseases that were registered: *Salmonella typhi-murium* infection in guinea-pigs and in canaries; duck plague; *Heterakis isolonchiae* infestation in pheasants; staphylococcal, streptococcal and other bacterial diseases of dogs (with drug-sensitivity tests); pleuropneumonia in cat associated with Group C streptococci; fowl cholera, acute gastroenteritis in rabbits associated with *Cl. welchii*, fatal *Cysticercus pisiformis* infestation of the liver in rabbits; salmonellosis in horses, and other causes of abortion; *Aspergillus* abortion in cattle; bovine mastitis; *Streptococcus zooepidemicus* infection in lambs; *Actinobacillus equuli* from rhinitis, diarrhoea or navel infection in four piglets.

Thirty-two strains of streptococci were classified into Groups C, D, E, G, H, L, R and S. Groups R and S are two new groups (defined by De Moor) and they occur specially in pigs, associated with pneumonia in most of the cases.—R.M.

Grice, H. C., Balazs, T., Hutchison, J. A. & Ditchfield, J. (1961). North American blastomycosis—a report of 2 cases in dogs.—Canad. vet. J. 2, 221-225. [Authors' summary modified.] 3194

Two cases were described and a brief review of the clinical symptoms of the disease in dogs was given. The cases occurred nearly a year apart, in Ottawa.

Jellison, W. L., Drouhet, E., Segretain, G., L'Héritier, M. & Petter, F. (1961). Adiaspiromycose (haplomycoze) chez les mammifères sauvages en France. [Haplomycosis in wild mammals in France.] — Ann. Inst. Pasteur 100, 747-752. [Summary in English.] 3195

Spherules of *Emmonsia crescens* were detected in the lungs of 2 shrews, 2 moles, and 6 voles of 2 species in France.—M.G.G.

Anon. (1961). Facial eczema: spore count investigation. — N.Z. J. Agric. 102, 535 & 537. 3196

Cases of facial eczema occurred only on

pastures giving for a period high counts of *Pithomyces chartarum* spores, and districts with a large proportion of fields giving high counts had more general outbreaks of facial eczema than districts where counts were on the whole low. It was concluded that spore counts are a useful means of assessing the danger of outbreaks of facial eczema.

—M.G.G.

Gierløff, B. C. H. (1961). Om trichophyti, specielt hos kanin og hund. (Trichophyton mentagrophytes.) [Trichophyton infection in rabbits and dogs.]—Nord. VetMed. 13, 177-196. [In Danish. Summaries in English and German.] 3197

Several rabbits, a dog and a man on a rabbit farm in Denmark became infected and *T. mentagrophytes* was isolated [12 illustrations].—R.M.

Uscavage, J. P. & Kral, F. (1961). Microsporum canis: isolation from the air. — J. Small Anim. Pract. 1, 279-280. [Authors' abst. modified.] 3198

The fungus was isolated from the air in a pet shop. Cages which housed the infected cats also were contaminated.

Gallo, P., Cesari, F., Rodriguez C., C. & Merino E., E. (1958). Nueva entidad nosográfica venezolana la "Nocardiosis bovina" y su agente la "Nocardia venezuelensis" n. sp. [Nocardia infection in a heifer in Venezuela.] — Rev. Med. Vet. Parasit., Maracay 17, 5-23. [Summary in English.] 3199

The name *Nocardia venezuelensis* was proposed for an organism isolated from a heifer with ulcerous dermatitis of the left hind leg. Clinical and histological findings and the properties of the isolate were described.

—M.G.G.

Ajello, L., Walker, W. W., Dungworth, D. L. & Brumfield, G. L. (1961). Isolation of *Nocardia brasiliensis* from a cat, with a review of its prevalence and geographic distribution. J. Amer. vet. med. Ass. 138, 370-376. 3200

An account is given of a cat with lesions (ascribed to cat bites) on the left hind foot and abscess in the hip. A tentative diagnosis of actinomycosis was based on microscopic and cultural examination of pus and treatment with potassium iodide (orally) and penicillin was administered, but without success. It died after about 2½ months. Gross and microscopic findings are described. The actinomycete, which was identified as *Nocardia*

*brasilensis* by its cultural characteristics, was pathogenic for g.pigs on i/p or intratesticular injection. It is considered that this is the first authenticated record of *N. brasilensis* infection in lower animals. The geographical distribution of infection in man is reviewed.

—T.E.G.R.

Provost, A. & Villemot, J.-M. (1961). Bactériotropines et phagocytose dans la péripneumonie bovine. [**Bacteriotrophins and phagocytosis in bovine contagious pleuropneumonia.**]—C.R. Acad. Sci., Paris 252, 2154-2156. 3201

Heparinized blood was mixed with culture of the avianized vaccine strain T3. The tube containing the mixture was placed in a roller-tube apparatus for an hour, then smears were prepared. Phagocytosis was assessed by counting the number of PPLO in 25 phagocytic cells. There was no phagocytosis when blood from susceptible cattle was tested, although it did occur with blood from species resistant to pleuro-pneumonia (man, horse, sheep, lab. animals). The reaction of goat blood varied. Blood from immune cattle strongly phagocytosed the PPLO.—R.M.

Litvinov, N. A. (1958). [I. Susceptibility of laboratory animals, goats and lambs to the agent of agalactia-like disease of sheep. II. Aetiology of the agalactia-like disease. III. Symptoms and treatment of the agalactia-like disease.]—Trudy Saratov. zootekh.-vet. Inst. 7, 3-8; 9-15 & 16-35. [In Russian.] 3202

A disease resembling contagious agalactia occurred among sheep in Moscow oblast in 1951. Losses were heavy: all the sheep died on two farms and on the third farm losses occurred over several years, particularly among youngstock. Illness commenced with fever, followed by enlargement of lymph nodes and keratitis; the surface of the cornea became pigmented in chronic cases. In unweaned lambs there was sometimes arthritis and orchitis. Changes in the mammary glands

were observed only in chronic cases: the glands were at first slightly swollen and lumpy, and after about a year they had become atrophic. The incubation period was 2-8 days in lambs, 18-25 days in adults. Acute disease, lasting for up to a month, was seen only in young lambs. The chronic disease lasted for 1-3 years. Treatment with various drugs was tried. The only one that appeared to be effective was novarsenol (nearsphenamine) injected at 0.015 g./kg. body wt., three times during a week. This drug was used on 460 adults and 620 lambs, and most of them recovered.

The causal agent was a PPLO but it differed from that of contagious agalactia in that it was pathogenic for mice, g.pigs and rabbits as well as for young goats and lambs. It did not lose its virulence for sheep and goats after passage in lab. animals. Lambs and young goats infected by intrathoracic injection died 20-27 days afterwards.—R.M.

Michel, M. C. (1961). Activité métabolique de la flore totale isolée de l'intestin du porc. Rôle des différentes espèces microbiennes. [**Metabolic activity of the total bacterial flora isolated from the intestine of the pig. Activity of the various bacterial species.**]—Ann. Biol. anim. 1, 16-28. [Summary in English.] 3203

The microbial flora isolated from the gastro-intestinal tract of pigs had a catabolic effect on amino-acids (deamination and decarboxylation). This activity varied according to the location of the flora in the intestinal tract, the individual and season. Sugars were catabolized with the formation of volatile acids; urea produced ammonia and choline produced trimethylamine. Most of the species in the flora deaminated arginine. Microbial catabolic activity in the intestine caused loss of energy and the appearance of toxic substances (particularly ammonia) in the portal vein blood.—T.E.G.R.

See also absts. 3261 (simultaneous immunization of mink against virus enteritis, distemper and botulism); 3444 (report, Canada); 3445 (report, Australia); 3446 (report, Rhodesia and Nyasaland Federation); 3447-3448 (report, Netherlands); 3449 (book, haemorrhagic septicaemia in cattle and buffaloes).

## DISEASES CAUSED BY PROTOZOAN PARASITES

Karib, A. E. (1961). **Animal trypanosomiasis in the Sudan.**—Sudan J. vet. Sci. anim. Husb. 2, 39-46. [In English.] 3204

Animal trypanosomiasis is widespread, affecting most domestic animals in varying degrees. *Trypanosoma congolense* causes the severest form of trypanosomiasis in cattle and also affects dogs, horses and mules. Camels

are rarely affected as they are not generally kept in the tsetse zone. Sheep and goats have been artificially infected. *T. vivax* is the commonest trypanosome in cattle outside the tsetse fly zone and the infection is more mild and chronic than that caused by *T. congolense*; it also affects sheep and goats, though they show no symptoms of natural infection.

*T. brucei* affects equines, dogs and cattle. In tsetse country cattle can be affected by all three species, *T. congolense* being heaviest and *T. brucei* lowest. The mode of transmission and the distribution of the three parasites is varied. *T. simiae* has been diagnosed in pigs. In several hundred game specimens examined, only a few non-pathogenic trypanosomes were seen.

The drugs used are mainly: Suramin for *T. evansi* in camels; Antrycide methylsulphate for *T. congolense* and *T. vivax* in cattle and for *T. evansi* in camels; Antrycide Prosalt for prophylaxis against bovine trypanosomiasis; Ethidium for the treatment of *T. congolense* and *T. vivax* in cattle. The three main factors which lead to the development of drug resistance by the trypanosomes are listed. Berenil is the best drug for the treatment of cattle harbouring trypanosomes resistant to Antrycide or Ethidium.—BRENDA M. WILSON.

Nelson, W. A. (1961). **Experimental elimination of Trypanosoma melophagium Flu from its hosts the sheep and the ked, Melophagus ovinus (L).**—Nature, Lond. 190, 739. 3205

Units of ked-infested sheep free from *T. melophagium* were maintained for several months. The original population of infected keds was destroyed by spraying with 0.5% toxaphene or malathion; after 6-8 weeks the sheep were given s/c 8 mg./kg. of quina-pyramine sulphate, and a week later were re-infested with puparia which had been disinfested in 1% mercuric chloride.—M.G.G.

Patyra, W. (1961). Kokcydioza u lisów hodowlanych. [**Coccidiosis in foxes.**]—Med. Wet., Warszawa 17, 352. [In Polish.] 3206

An account of an outbreak in which mainly 6-week-old foxes were affected and 1 of 36 died. The clinical signs were dullness, foetid diarrhoea and loss of condition. Very numerous oocysts of the *Isospora* sp. were seen in the faeces. P. claims good response to iodized milk and the usual hygienic control measures.—M. GITTER.

Dumith Arteaga, G. (1960). Estudio sobre algunos casos de babesiellosis intracerebral en bovinos de Venezuela. [**Babesia in the brain of Venezuelan cattle.**]—Bol. Inst. Invest. vet. Maracay 12, No. 27 pp. 47-51. [Summary in English.] 3207

Two cows had nervous symptoms which aroused suspicion of rabies. P.M. examination revealed no evidence of disease except marked cerebral congestion. Blood smears

were negative; Negri bodies were not demonstrable in the hippocampus but the cerebral capillaries contained an excess of r.b.c. all of which contained *Babesia argentina*. Rabies and other virus and bacterial diseases were ruled out by animal inoculation and cultural methods. Experimental transmission, by s/c or i/p inoculation of infected material into cattle, was not achieved.—T.E.G.R.

van der Walt, K. (1960). **Report on a trial with M & B 5062A in canine babesiasis.**—J. S. Afr. vet. med. Ass. 31, 261-264. [Author's summary modified.] 3208

A short description of the clinical features of biliary fever in dogs in South Africa is given.

At a dosage rate of up to 50 mg./kg. body wt. the drug [Diampron] appears safe and causes no discomfort.

An analysis of the results obtained in 40 cases is presented. At all dosage levels employed the results were variable and unpredictable.

van der Wouden, M. (1961). **Toxoplasma gondii, a possible cause of stillbirth in cattle.**—Tijdschr. Diergeneesk. 86, 554-555. [In English. Summaries in French, German and Dutch.] 3209

There was a high incidence of stillbirth and abortion in an Aberdeen-Angus herd in New Zealand. Tests for agents that could cause abortion were negative. Blood from four cows was tested for toxoplasmosis, and one gave positive results. Brain lesions like those of toxoplasmosis were found in one calf. —R.M.

van der Gulden, W. J. I. & Folkers, C. (1961). **Toxoplasma gondii bij biggen in Nederland. [Toxoplasma gondii in piglets in the Netherlands.]**—Tijdschr. Diergeneesk. 86, 542-546. [In Dutch. Summaries in English, French and German.] 3210

This is stated to be the first report from the Netherlands of toxoplasmosis in piglets. —R.M.

Guillo, B. (1961). La toxoplasmose. Diagnostic. Epidémiologie. [**Toxoplasmosis. Diagnosis, epidemiology.**]—Bull. Off. int. Epiz. 55, 22-58. [Summaries in English and Spanish.] 3211

A review of the symptoms and incidence of toxoplasmosis in domestic animals and man, and of the different methods of diagnosis. The respiratory route seems to be the most frequent route of infection for free forms of

toxoplasma and the alimentary route for encysted forms. Transmission by ticks and lice may be important.—M.G.G.

Remington, J. S., Jacobs, L. & Melton, M. L. (1961). **Congenital transmission of toxoplasmosis from mother animals with acute and chronic infections.**—J. infect. Dis. 108, 163-173. 3212

In pregnant mice infected i/p or s/c with a virulent strain of toxoplasma, congenital transmission was first observed on the 5th day of infection. The highest percentage of infected young (56%) was found in litters born on the 7th day after i/p infection of the mother. In rats infected on the 10th day of gestation, foetuses and placentas were positive on the 14th day. Female mice with chronic infections frequently delivered infected young, but g.pigs did not, and rats only rarely. An instance of congenital transmission of toxoplasmosis in mice to the third generation was observed.—M.G.G.

Shimizu, K. (1961). [Studies on toxoplasmosis. III. Tissue culture of *T. gondii*.]—Jap. J. vet. Sci. 23, 33-44. [In Japanese. Summary in English.] 3213

High yields of *T. gondii* (10-18 million per ml.) were obtained in HeLa, L, and dog kidney cells by inoculating with washed organisms taken from the peritoneal fluid of mice on the 2nd or 3rd days of illness, addition of 1% calf serum to the culture fluid, the use of young culture cells at the ratio of one cell to every 10 organisms in the inoculum, and maintenance of the pH at neutral.—M.G.G.

Piekarski, G., Schäfer, E. & Niederländer, R. (1961). Mikroskopische und serologische Studien über die Häufigkeit von Sarcocystis

*tenella* bei Schafen. [Incidence of *Sarcocystis tenella* in sheep.] — Z. Parasitenk. 20, 479-488. 3214

The oesophagus of 311 adult sheep was obtained. Microscopic examination of finely teased muscle revealed *S. tenella* spores in 97%, although only 14% were positive macroscopically. Spores were also found in the oesophagus of 61% of 64 lambs and in 24 of 25 samples of mutton, but not in 6 sheep embryos. Of 223 adult sheep from which oesophagus and blood samples were obtained, 217 were positive to microscopic examination, and 156 to the c.f. test using the Fulton-Dumbell technique.—M.G.G.

Mel'nikova, A. D. (1959). [Changes in fauna of rumen and caecum of sheep caused by anthelmintics, syntomycin (chloramphenicol) and etazol (sulphaethidole).] — Trudy Buryat. zoovet. Inst. 14 (Vet.), 259-265. [In Russian.] 3215

The proportions of 13 species of protozoa (mainly *Bietsilia*, *Entodinium* and *Anoploidium* species) in the rumen and caecum were expressed as percentages. Colour, total acidity and pH of the ingesta were also recorded. Heptylresorcin, tin arsenate, 1% copper sulphate solution, phenothiazine and sodium fluoroacetate in anthelmintic doses did not influence the fauna or the physico-chemical properties of the ingesta. Acetarsol (osarsol) reduced the numbers of infusoria and slowed their motility, it also reduced rumination and peristalsis. Chloramphenicol at 0.8 g. thrice daily for 7 days, and 0.5 g. sulphaethidole thrice daily for 3 days, led to increases in numbers and motility of infusoria. —R.M.

See also absts. 3445 (report, Australia); 3446 (report, Rhodesia and Nyasaland Federation).

## DISEASES CAUSED BY VIRUSES AND RICKETTSIA

Thomas, J. A. & Leclerc, J. (1961). Recherches préliminaires sur l'obtention d'anticorps du virus de la fièvre aphteuse dans le lait de vache, après injection de virus dans le canal du trayon (immunisation diathétique). [Foot and mouth disease antibodies in the milk after inoculation of antigen into the teat canal of cows.] — C.R. Acad. Sci., Paris 252, 1690-1692. 3216

Virulent virus injected into the teat canal caused generalized F. & M. disease and milk collected 17 days afterwards did not protect animals from infection. Antigen was prepared by adding 0.5% ethylene oxide to virus

suspension. The ethylene oxide was removed by bubbling sterile nitrogen through the suspension. The inactivated virus was inoculated through a teat cannula after milking on two successive days (20 ml. of a 1:20 dilution). A week later intramammary inoculation of virulent virus did not cause F. & M. disease and milk drawn at the next milking was uninfected for g.pigs. Cows given two intramammary inoculations of antigen and two of virus resisted inoculation of a million infective doses of virus into the tongue.

Lactoserum was prepared by removal of

casein from milk of immunized cows: antibodies (detected by gel diffusion tests and experiments on g.pigs and cattle) were usually present only between one and four days after completion of immunization.—R.M.

Paraf, A., Asso, J., Fougereau, M. & Verge, J. (1961). Multiplication d'une souche de virus aphteux chez deux lignées consanguines de souris. [**Multiplication of foot and mouth disease virus in two consanguineous lines of mice.**]—C.R. Acad. Sci., Paris 252, 2328-2330. 3217

Mice were inoculated i/p with ordinary or lapinized virus of the Loupigne strain. C3H mice were much more susceptible to the virus than mice of the C<sub>57</sub>B1/6 line.—R.M.

Palacios García, C. A., Fuentes Marins, R. A., Castañeda García, J. & Maldonado Hernández, A. (1960). Avianización del virus de la fiebre aftosa tipo "O" Vallée, cepa Lara de Venezuela. [**Avianization of a Venezuelan strain of Type O foot and mouth disease virus.**]—Bol. Inst. Invest. vet. Maracay 12, No. 27 pp. 3-27. [Summary in English.] 3218

The virus of 95th passage in day-old chicks was inoculated into the chorioallantoic membrane of 9-day-old chick embryos. After the 18th passage the 50% end-point titre was between 10<sup>-4</sup> and 10<sup>-6</sup>. Virus concentration was higher, by 1-2 potencies, in the embryo than in the fluids. After the fourth passage pathogenicity for cattle markedly decreased. Immunogenicity decreased with the number of passages; however the sixth passage virus was highly antigenic. Non-vaccinated cattle in contact with others vaccinated with 6th, 12th and 17th passage virus did not become infected nor did they develop immunity. Pigs in contact with vaccinated cattle did not become infected. They were susceptible to sixth passage virus and infected other pigs in contact with them.—T.E.G.R.

de Abreu Martins, I. (1960). Produccion economica de virus aftosa para fabricacion de vacunas por el metodo Frenkel. [**Economical production of foot and mouth disease vaccine.**]—Cienc. vet., Mexico 5, 489-496. 3219

The virus was grown according to Frenkel's method, using simpler and cheaper culture media: glucose with peptone or with 5 amino-acids. In parallel cultures of previously adapted O, A and C strains (of 7th passage) titres were as high in peptonized glucose as in the medium enriched with amino-acids. A comparative study of 2 field

O strains (of 9th and 5th passage) gave similar results. In large scale cultures using 3,500-10,000 ml. peptonized glucose, titres of 10<sup>7.26</sup> to 10<sup>8.3</sup> I.D.<sub>50</sub>/ml. were obtained for unweaned mice—which indicates that the medium is suitable for vaccine production.

—T.E.G.R.

I. Hobohm, K. O., Rivenson, S. & Planes de Banchero, E. (1961). Experimentelle Grundlagen einer immuno-chromatographischen Technik zur Typisierung des Maul- und Klauenseuche-Virus. [**An immuno-chromatographical technique for typing the virus of foot and mouth disease.**]—Zbl. Bakt. I. (Orig.) 182, 135-142. [Summaries in English, French, Spanish and Russian.] 3220

II. Hobohm, C. O. & Rivenson, S. (1960). Aplicación de la cromatografía sobre papel para demostrar la formación de precipitados entre virus aftosos y anticuerpos específicos. (Segunda comunicación). [**Demonstration by paper chromatography of precipitates between foot and mouth disease virus and specific immune sera. II.**]—Rev. Invest. Ganad. No. 9 pp. 129-134. [Summaries in English and German.] 3221

I & II. Types O, A and C of the virus extracted from ox tongue epithelium were typed on glass-fibre paper with g.pig immune serum. The precipitates were stained with bromphenol blue.—M.G.G.

Forrest, G. E. (1960). Ensayos sobre inmunidad y serología de algunas variantes del virus aftoso. [**Immunology and serology of some variants of foot and mouth disease virus.**]—Rev. Fac. Cienc. vet. La Plata 2, 217-230. [Summary in English.] 3222

Immunological and serological studies of 3 strains of F. & M. disease virus Type O revealed no differences between them.

—T.E.G.R.

Csontos, L., Héjj, L. & Szabó, I. (1961). Adat a sertés Aujeszky-féle betegségének kórtanához. A magzatok károsodása és a betegség vírusa által okozott elvetélés. [**Pathology of Aujeszky's disease in pigs. Abortion and foetal lesions.**]—Mag. állator. Lapja 16, 169-172. [In Hungarian. Summaries in English and Russian.] 3223

In three herds in which outbreaks of Aujeszky's disease occurred, late abortions, stillbirths and high piglet mortality were observed. Rabbits inoculated i/m with liver suspension from aborted foetuses died of Aujeszky's disease; bacteriological and histo-

logical examinations revealed no bacteria in the stomach contents and viscera of the foetuses. A specific P.M. picture was found in a large proportion of the foetuses, in particular subcutaneous oedema, exudate in the body cavities, and pin-point foci of necrosis in the liver and spleen, suggesting that intra-uterine infection had taken place.

—A. SEBESTENY.

Atanasiu, P., Favre, S. & Collombier, M. (1961). Multiplication du virus de la rage fixe sur cellules gliales en culture et apparition d'inclusions spécifiques intracytoplasmiques. Application au diagnostic de la rage. [**Multiplication of rabies virus in cultures of glial cells and its application to diagnosis of rabies.**]—C.R. Acad. Sci., Paris 252, 2029-2031. 3224

A strain of ependymal cells was grown in a medium composed of casein hydrolysate, Earle's soln. and inactivated horse serum. Fixed rabies virus multiplied in the cultures and gave rise to intracytoplasmic inclusions demonstrable by Mann's staining method. Diagnosis could be confirmed by neutralization of virus with immune serum, and the whole procedure could be completed in 2-5 hours.

—R.M.

Almássy, K. & Szabó Szűcs, J. (1961). Fiasított tyúktöjásban szaporított veszettség-vírus-törzsek tulajdonságai. [**Some properties of rabies virus propagated in embryonated eggs.**]—Mag. állator. Lapja 16, 91-93. [In Hungarian. Summaries in English and Russian.] 3225

The authors compared the efficacy of two avianized rabies vaccines with that of the active and inactivated sheep-brain vaccine officially used in Hungary.

One avianized vaccine was prepared from the fixed virus of Högyes by 35 passages in 7-day-old chick embryos, the other was the avianized strain of Kelev used officially in Israel.

The efficiency of the vaccines was determined on white mice weighing 16-20 g. Doses of 0.25 ml. of the vaccines were given i/p and after 14 days the mice were challenged intracerebrally with 0.03 ml. of ascending dilutions of virulent virus. The sheep brain vaccine protected mice against 2,500 lethal doses; after inactivation it protected them against 60 l.d.; the Kelev vaccine protected against 55 l.d. and the avianized Högyes vaccine against 5 l.d.

In tests on dogs, the vaccine dose was

6 ml., s/c. The results of virus neutralization tests on the dogs' blood showed a correlation with the above results.—A. SEBESTENY.

Szabó Szűcs, J. (1961). A Kelev-jelű veszettség-vírus-törzs szaporítása szövettenyésztésben. [**Propagation of rabies virus strain Kelev in tissue culture.**]—Mag. állator. Lapja 16, 183-185. [In Hungarian. Summaries in English and Russian.] 3226

The "Kelev" avianized strain of rabies virus was maintained in 23 passages in nervous tissue cultures of chick embryos. Between each of the 23 tissue passages a mouse passage was needed except at the 13th and the 18-22nd passages, where the virus was so virulent that it killed mice when injected intracerebrally in 10-100 dilutions. No cytopathic effect of the virus could be seen. In the first two passages no live virus was found in the tissue cultures after 72 hours, but from the third passage onwards the virus retained its pathogenicity to mice for 96-144 hours in the cultures. In the 8th passage the cycle of reproduction of the virus was studied by testing the virulence of the culture on mice at 12-hour intervals for 10 days. A consistent sharp tenfold rise in virulence was found in the 72nd hour, indicating that a multiplying phase occurred at this stage. Attempts to propagate the virus in skin and myocardial tissue of chick embryos gave disappointing results.—A. SEBESTENY.

Dinculescu, P. & Ursache, R. (1961). Acțiunea mertiolatului de sodiu și merfenului asupra virusului rabic fix. [**Action of merthiolate sodium and Merfen on fixed rabies virus.**]—Lucr. Inst. Pasteur București 5, 179-186. [In Roumanian. Summaries in French, German and Russian.] 3227

Merthiolate sodium (thiomersal) 1:5,000 in a 3.5% suspension of brain infected with fixed rabies virus did not affect mouse pathogenicity nor keeping quality. Aluminium hydroxide adsorbed fixed-virus vaccine retained its immunizing quality after substitution of antibiotics by 1:5,000 merthiolate or Merfen (phenylmercuric borate). This was proved in sheep, immunized when 90 and 120 days old, and challenged intra-ocularly with 0.5 ml. of a 5% virus suspension.—E.G.

Gheorghiu, I., Nițoiu, I., Dinculescu, P. & Stanca, M. (1961). Valoarea imunogenă a vaccinurilor antirabice și antivariolice aviare, preparate cu tulpini vii modificate și a congenerelor respective, fenolate. [**Rabies and fowl pox vaccines prepared from modified or**

**phenolized strains.]** — *Lucr. Inst. Pasteur București* 5, 197-208. [In Roumanian. Summaries in French, German and Russian.] 3228

Immunity conferred on rabbits by phenolized glycerin (Kondo) or aluminium hydroxide adsorbed live vaccine prepared from fixed rabies virus, was not influenced by the route (i/m or i/d) of vaccination. Adsorbed vaccine protected just over half of the rabbits against challenge with fixed virus 14-20 days later, whereas Kondo vaccine protected only a quarter.

Phenolized adsorbed fowl pox vaccine 10-120 days old protected 41.1% of fowls against subsequent challenge whereas live freeze-dried vaccine 61-639 days old protected 84.4%.—E.G.

Tsubahara, H., Kataoka, T. & Kato, K. (1961). [**Complement fixation in fowl pox. III. Direct complement fixation with fowl serum.**] — *Bull. Nat. Inst. Anim. Hlth, Tokyo* No. 41 pp. 1-5. [In Japanese. In English pp. 6-10.] 3229

After incubation at 37°C. for 30-90 min. direct complement fixation was obtained in active chicken serum-fowl pox virus antigen systems. After fowl pox infection in chickens, direct c.f. and neutralizing antibodies developed, but the neutralizing antibodies persisted longer; the response curve of direct c.f. antibody generally corresponded to that of indirect c.f. antibody. Although some antigenic differences were evident between fowl pox virus, Nishigahara strain and pigeon pox virus, Kumomoto strain, common antigenicity existed between the 4 strains of fowl and pigeon pox virus tested. A heat-stable and heat-labile antigen were detected in infected tissue.—A. ACKROYD.

Hartwig, H. & Bengelsdorff, H. J. (1961). Die Bedeutung von Impftechnik und Virusgehalt für den immunogenen Effekt bei Hühnerpockenimpfstoffen aus Taubenpockenvirus. [**Influence of vaccination technique and virus content on immunogenicity of pigeon pox virus vaccine against fowl pox.**] — *Dtsch. tierärztl. Wschr.* 68, 237-239. [Summary in English.] 3230

Fowls should be immunized against fowl pox with a pigeon pox virus vaccine containing  $10^4$  I.D.<sub>50</sub> for embryonated eggs per 0.1 ml. About 15-20 feather follicles should be treated, and examination of 10% of the immunized birds 8-10 days later should reveal at least 6 pocks on each bird.—M.G.G.

Bengelsdorff, H.-J. (1961). Revaccinationsversuche mit verschiedenen Hühnerpockenschutzimpfstoffen. [**Re-vaccination with fowl pox vaccines.**] — *Zbl. VetMed.* 8, 498-506. [Summaries in English, French and Spanish. English summary modified.] 3231

Following re-vaccination, inoculation pocks develop in all inoculated feather follicles when heterologous viruses are used for re-vaccination. The inoculation pocks in such cases are not abortive. Vaccines made from pigeon pox virus give re-vaccination pocks in nearly every case when egg material is used for vaccination and pigeon virus for re-vaccination or *vice-versa*. The inoculation pocks show no abortive characters. For re-inoculation when the first vaccination has been inadequate it seems best to use a vaccine which differs from the first vaccine in virus species or method of proliferation.

Tsubahara, H. & Kato, K. (1961). **Application of agar gel precipitin test to bird pox viruses.** — *Bull. Nat. Inst. Anim. Hlth, Tokyo* No. 41 pp. 43-54. [In English. Summary in Japanese.] 3232

Precipitin lines, the greatest number of which was three, one thick and the others thin, were observed in agar gel precipitin (AGP) tests between bird pox viruses and antisera. Although there were slight antigenic differences, common antigenicity was observed between fowl, pigeon and canary pox viruses. No cross precipitation was observed between fowl pox and vaccinia viruses. The antigens concerned in the AGP reaction were soluble and heat-labile. Following infection in birds, the antibody responsible for the thick precipitin line was the first to appear, 2-3 weeks after infection.—A. ACKROYD.

Kilbourne, E. D., Smart, K. M. & Pokorny, B. A. (1961). **Inhibition by cortisone of the synthesis and action of interferon.** — *Nature, Lond.* 190, 650-651. 3233

Chick embryos were injected with 0.1 or 1 mg. of cortisone followed 2 hours later by influenza virus. After 70 hours the interferon content of their allantoic fluid was much lower than in embryos not given cortisone before the injection of virus. It was also demonstrated that cortisone and other steroids inhibit the effect of pre-formed interferon.—M.G.G.

Daniels, J. B., Ratner, J. J. & Brown, S. R. (1961). **Plaque reduction, a sensitive test for**

**eastern encephalitis antibody.**—Science 133, 640-641. 3234

Using a plaque reduction technique, antibody neutralizing Eastern encephalitis virus was detected in 92 sera from human beings, animals and birds. In the tube test only 18 were positive.—M.G.G.

Burton, A. N., Connell, R., Rempel, J. G. & Gollop, J. B. (1961). **Studies on Western equine encephalitis associated with wild ducks in Saskatchewan.**—Canad. J. Microbiol. 7, 295-302. 3235

Antibodies neutralizing the virus were found in the blood of several species of wild duck in Saskatchewan. The virus was recovered from the blood and organs of wild ducks infected experimentally by the oral route.—M.G.G.

Rice, C. E. (1960). **The use of complement-fixation tests in the study and diagnosis of viral diseases in man and animals—a review. V. The arboviruses.**—Canad. J. comp. Med. 24, 352-358. 3236

A review with 67 references. Although the more broadly reactive haemagglutination-inhibition test is now considered the best for demonstrating antigenic relationships between the arthropod-borne viruses causing disease in animals and man, the somewhat narrower specificity of the complement-fixation test is an asset for diagnostic purposes. Although the neutralization test might be even more specific it is time consuming and expensive, so the c.f. test is preferred for diagnostic and other purposes in most laboratories.

—R. V. L. WALKER.

Nobuto, K. (1961). **[Working ability of horses with chronic infectious anaemia. I. Clinical and haematological changes after exercise.]**—Jap. J. vet. Sci. 23, 45-58. [In Japanese. Summary in English.] 3237

Ten healthy horses and 36 anaemic horses which had not shown fever for over 6 months were exercised for an hour at intervals of 10 days: 14 of the anaemic horses could not complete the exercise. In anaemic horses the body temp., respiration rate, pulse rate, and specific gravity, viscosity and dry matter content of the blood took longer to return to normal, the increase in sedimentation rate was delayed, and the number of lymphocytes was below normal as late as 24 hours after exercise.—M.G.G.

Watanabe, S. (1961). **[Studies on equine infectious anaemia virus in tissue culture. V. Proof**

**of identity.]**—Jap. J. vet. Sci. 23, 59-66. [In Japanese. Summary in English.] 3238

Spleen, kidney, liver, heart and lung of an infected horse were cultured by the plasma-clotting method, in a synthetic medium ("199") containing 30% ox serum and the culture fluid was renewed every week; good growth was obtained. After 6 renewals the tissues and the culture liquid were pooled, and centrifuged and 3-4 ml. of the supernate was inoculated into a horse, which developed the disease. Similar results were obtained when the culture was twice as long. Results are taken to indicate that the virus retains its activity and grows to some extent, when cell proliferation occurs.—T.E.G.R.

Howell, P. G. (1960). **The 1960 epizootic of African horsesickness in the Middle East and S.W. Asia.**—J. S. Afr. vet. med. Ass. 31, 329-334. 3239

The course of the epidemic in the Middle East and south-west Asia was reviewed. It was distributed by the horses of nomads and gypsies, and having reached the great river basins, was spread rapidly by dense insect populations.—M.G.G.

Adlan, A. M. & Evans, S. A. (1961). **Rinderpest (cattle plague) attenuated goat virus vaccine production in the Sudan.**—Sudan J. vet. Sci. anim. Husb. 2, 36-38. [In English.] 3240

The technique is described for the preparation of a living attenuated rinderpest goat virus vaccine using the Sudan Vom Kabete 615 strain which has given favourable field results. It is simply freeze-dried infected goat spleen and will retain its potency under high vacuum for at least 2 years at  $-20^{\circ}\text{C}.$ , for 30 days at  $\pm 10^{\circ}\text{C}.$  and for 4 days at room temperature.—A. ACKROYD.

Studdert, M. J., Radostits, O. M. & Savan, M. (1961). **An outbreak of infectious bovine rhinotracheitis in Ontario.**—Canad. vet. J. 2, 201-206. [Authors' summary modified.] 3241

An outbreak of an acute infection of the upper respiratory tract in cattle and the isolation of a viral agent are reported. The virus was indistinguishable from that known to cause infectious bovine rhinotracheitis in the U.S.A. and infectious pustular vulvovaginitis in Canada and the U.S.A. This is the first confirmed report of the infectious bovine rhinotracheitis syndrome in Canada.

Knocke, K.-W. & Liess, B. (1961). **Die morphologische Entwicklung des Virus der**

Rhinotracheitis infectiosa des Rindes. [**Morphological development of the virus of bovine infectious rhinotracheitis.**] — Zbl. Bakt. I. (Orig.) 181, 429-439. [Summaries in English, French, Spanish and Russian. English summary modified.] 3242

Very thin sections of cell cultures infected with the rhinotracheitis virus isolated by B. Liess and his colleagues [*V.B.* 31, 1469] were studied by electron microscopy to determine the morphological development of the elementary bodies. The first stages were represented by intranuclear bodies, measuring 90 m $\mu$  long and 50 m $\mu$  wide, containing a central granule. Mature elementary bodies had a diameter between 130 and 180 m $\mu$ . Growth was due to enlargement of the membrane, since the central body did not grow. The mature particles were found outside the cells.

Rislakki, V. (1961). Nautaeläinten ajankoh-  
taisista virustaudeista. [**Virus diseases of  
Finnish cattle.**]—Finsk VetTidskr. 67, 407-  
418. [In Finnish. Abst. from English sum-  
mary.] 3243

An infectious disease of cattle, wide-  
spread in Finland in 1958 and 1959, caused  
diarrhoea, fever, anorexia and slight cough;  
or fever and small erosions in the mouth and  
sometimes small vesicles on the udder.  
Mortality was low. Antibodies against para-  
influenza-3 virus were demonstrated in  
affected herds, and in Sweden where similar  
cases were observed antibodies against both  
PI-3 and VD viruses were found.—M.G.G.

Moll, T. & Davis, A. D. (1961). **A study of  
bovine enteric virus (BEV) infections among  
cattle on infected premises.**—Canad. vet. J. 2,  
161-167. [Authors' summary modified.] 3244

Data are presented concerning bovine  
enteric virus (BEV) infections, virus carrier  
stages and virus neutralizing antibody  
responses in cattle. Most cattle became  
infected within 3½ months in BEV-  
contaminated environments. Infected animals  
became constant or intermittent gastro-  
intestinal virus carriers for periods varying  
from less than two weeks to more than 6  
months. Most animals which became infected  
developed a rise in neutralizing antibody titres  
against a BEV culture previously isolated on  
the same premises. Maximum serum titres  
developed in 1-8 months and persisted in  
several animals for at least 2-4 months.

Several virus-carrying calves in one group  
did not show a rise in neutralizing antibodies

against BEV-1.

Calves sucking colostrum from mothers  
with neutralizing antibodies against BEV  
developed serum titres, approximating those  
of their mothers, 24-48 hours after birth. The  
need for serological typing of BEV is  
discussed.

Lafenêtre, H., Cortez, A., Vollhardt, Y.,  
Quatrefages, H., Carrère, L., Mandin, J. &  
Pourquier, M. (1961). Contribution à l'étude  
au laboratoire de l'avortement à virus de la  
brebis. [**Laboratory diagnosis of ovine virus  
abortion.**] — Rev. Méd. vét. 112, 241-248.  
[Summaries in English and Spanish.] 3245

An account of the staining and micro-  
scopic examination of aborted material,  
isolation of the virus in eggs, g.pigs and mice,  
and the agglutination test using Q 18 antigen  
and *Rickettsia burneti* antigen.—M.G.G.

Grešková, M., Albrecht, P. & Ernek, E.  
(1961). **Comparison of an attenuated and  
virulent louping ill strain.** — Nature, Lond.  
190, 508-510. 3246

Of 6 sheep infected s/c with an  
attenuated strain of louping-ill virus, 2 had  
viraemia of short duration, and excreted the  
virus in the milk between the 5th and 8th days  
after injection. There were no symptoms,  
even in sheep infected intracerebrally with a  
high dose of the virus. Histological examina-  
tion showed perivascular infiltrations in sheep  
infected intracerebrally, but no damage to  
nerve cells. Attempts to isolate the virus from  
organs were unsuccessful. Sheep inoculated  
first with the attenuated strain and 10-14 days  
later with a virulent strain remained healthy.

Sheep infected intracerebrally with the  
virulent strain developed fever, tremor, ataxia  
and paralysis, and died in 5-7 days. Marked  
hyperaemia and small haemorrhages were seen  
in the brain and spinal cord, and high titres  
of virus were demonstrated in the brain.  
Inflammatory lesions and damage to neurones  
were found.—M.G.G.

Millian, S. J. & Englehard, W. E. (1961).  
**Application of the conglutination complement  
absorption test to detect hog cholera anti-  
bodies. I. The technique.**—Amer. J. vet. Res.  
22, 396-400. 3247

The technique of the conglutination  
(agglutination) complement absorption test for  
swine fever is described. After titrating  
conglutinin (heat-activated bovine serum  
absorbed with 5% sheep r.b.c.), complement,  
and complement in the presence of antigen

(modified live virus swine fever vaccine), two-fold dilutions of the serum to be tested are added to antigen diluted in twofold steps, and horse serum containing 4 units of complement and incubated for 30 min. at 37°C. Four units of conglutinin and 0.25% sheep r.b.c. are then added to each tube, centrifuged, shaken and read. As anticomplementary activity was observed with antigen in dilutions of 1:40 or less, 1:80 dilution was considered the most concentrated antigen dilution usable. Pre-treatment of antiserum with either periodate or trypsin-periodate facilitated detection of antibody.—A. ACKROYD.

Bran, L., Carp, N., Rusu, V., Birnaure, G. & De Simon, M. (1961). Determinarea conținutului în virus al singelui și organelor după intervale de timp diferite de la infecția experimentală cu virus pestos porcîn. [**Virus content of blood and organs at various intervals after infection with swine fever virus.**]—Lucr. Inst. Pasteur București 5, 91-103. [In Roumanian. Summaries in French, German and Russian.] 3248

Multiplication of swine fever virus in pigs infected with 2 m.l.d. of virulent blood was determined by periodic examination of the virus titre in blood, spleen and lymph nodes. The virus was not demonstrable in the blood 24 hours after infection but 48 hours after infection it was present in titres of 1:100–1:1,000. Titres increased, generally reaching a maximum of at least 1:5,000,000 in six days. The seventh day titres fell to 1:2,700,000. In pigs with severe clinical symptoms, titres were higher than in those with milder forms. In individual pigs spleen and lymph node titres were similar but lower than blood titres.—E.G.

Mihăiță, S. & Popa, M. (1961). Rezultate obținute în aplicarea experimentală a virusului lapinizat, în mediu contaminat cu pestă porcînă. [**Results obtained with lapinized swine fever virus in an infected area.**]—Lucr. Inst. Pasteur București 5, 119-128. [In Roumanian. Summaries in French, German and Russian.] 3249

In an infected district, lapinized swine fever vaccine alone protected about 60%, and simultaneous inoculation of lapinized virus and immune serum protected up to 90% of pigs weighing 30–40 kg.—E.G.

Dunne, H. W. (1961). The pattern and causes of "breaks" following vaccination with

**attenuated hog cholera vaccines.**—J. Amer. vet. med. Ass. 138, 311-316. 3250

The factors responsible for failure of attenuated swine fever vaccines are classified. Long term breaks—when the passive immunity conferred by the serum is depleted and active antibody production has not been stimulated—may be due to: (1) Antibody block caused by (a) previous use of serum alone, (b) maternal antibodies, (c) excessive serum at vaccination; (2) non-specific resistance; (3) loss of immunizing titre of the vaccine. Short term breaks—within 10 days of vaccination—may be due to: (1) Infection with the virus at least 4 days before vaccination; (2) decreased resistance to vaccine virus associated with (a) ascarid infection, (b) simultaneous or prior infection with bacteria or protozoa, (c) hypersensitivity, (d) iso-antibodies in the serum; (3) vaccine reversion; (4) variant virus; and (5) latent viruses.

—A. ACKROYD.

Manso Ribeiro, J. & Rosa Azevedo, J. (1961). Réapparition de la peste porcine africaine (P.P.A.) au Portugal. [**Reappearance of African swine fever in Portugal in 1960.**]—Bull. Off. int. Epiz. 55, 88-106. [Summaries in English and Spanish.] 3251

African swine fever reappeared in Portugal in April 1960, in pigs in the Lisbon district eating waste from restaurants. Fresh outbreaks occurred in spite of immediate destruction of the affected herd. Two further outbreaks in East and Central Portugal were thought to be due to the illegal trade in Spanish pork and to food waste from the Madrid-Lisbon express train. During 1960, 187 herds were affected and 14,629 pigs died or were slaughtered. At the end of December the disease was still active in the Lisbon and Setubal districts, but the other foci had been extinguished. P.M. lesions, control measures, and attempts at tissue culture of the virus were summarized.—M.G.G.

Szurman, J. (1961). Polarographic determination of metabolic changes in trypsinized swine cell cultures after infection with Teschen disease virus (*Encephalomyelitis enzootica suum*).—Acta Virologica, Prague 5, 188-189. [In English. Author's conclusions modified.] 3252

The difference in the height of the "catalytic wave" (*i.e.*, the pattern revealed by polarographic analysis) between infected and non-infected cell cultures shows that the metabolism of substances soluble in sulpho-

salicylic acid may be affected by Teschen disease virus.

Janowski, H. & Gołaszewski, H. (1961). Zakaźne wirusowe zapalenie żołądka i jelit u świń. [**Transmissible porcine gastro-enteritis.**] — Med. Wet., Warszawa 17, 281-285. [In Polish. Summaries in English, French, German and Russian.] 3253

An account of severe outbreaks of diarrhoea in pigs involving all age groups but especially unweaned piglets. The mortality rate was up to 100% in pigs up to 2 weeks of age and up to 50% in older ones. Gastro-enteritis was the common P.M. finding. Bacteriological and toxicological examinations proved negative and there was no response to antibiotic and sulphonamide therapy. The authors suggest that the outbreaks were caused by the virus of transmissible porcine gastro-enteritis which might have been brought to Poland by a boar purchased in the U.S.A. which was introduced into the herd two months before the first outbreak of the disease.—M. GITTER.

Thoonen, J. & Hoorens, J. (1961). Inclusion-body rhinitis (I.B.R.) bij biggen. [**Inclusion-body rhinitis in pigs in Belgium.**]—Vlaams diergeneesk. Tijdschr. 30, 101-105. [In Flemish. Summaries in English, French and German.] 3254

Two outbreaks were recorded.—R.M.

Bontscheff, N. (1961). I. Ätiologische Forschungen der Virus-Pneumonie bei den Ferkeln. II. Kultivierung des Ferkelpneumonie-Virus in Hühnerembryonen und Erforschung seiner Eigenschaften. [**Aetiology of virus pneumonia of piglets in Bulgaria.**]—Zbl. Bakt. I. (Orig.) 181, 417-422 & 423-428. [Summaries in English, French, Spanish and Russian.] 3255

B. isolated a virus from the lungs of piglets with pneumonia. It was not pathogenic for mice and rabbits and did not agglutinate erythrocytes. It was cultivated in the yolk-sac (but not in the chorio-allantoic cavity) of chick embryos aged 5-6 days. Embryos died between 2 and 9 days after infection. The virus retained its pathogenicity for chick embryos after ten serial passages in embryos. It appeared to be similar to the porcine pneumonia virus isolated in England and Sweden.—R.M.

Žuffa, A., Škoda, R. & Pokorná, J. (1961). Príspevok k výskytu chrípky ošípaných Shopovho typu na západnom Slovensku. [**Occurrence of swine influenza (Shope) in**

**Western Slovakia.**]—Vet. Čas. 10, 237-247. [In Slovak. Summaries in German and Russian.] 3256

Among 447 serum samples from pigs, examined in Western Slovakia, only those from one sow and her litter of four contained neutralizing antibodies against Shope's type of influenza virus. Attempts to isolate the virus in chick embryos from pneumonic lungs of 50 pigs, failed. It was concluded that swine influenza in that part of Czechoslovakia is not an important factor and that most respiratory disorders were due to other agents, particularly porcine virus pneumonia.—E.G.

Peterson, W. D., Jr. (1960). **A study in vitro of components in the transmission cycle of swine influenza virus proposed by Shope.**—Dissertation, Michigan pp. 65. [Ann Arbor, Michigan: University Microfilms Inc.] 3257

A brief account of Peterson's work has been published [*V.B.* 30, 2558]. Full details of his experiments are available in this dissertation. P. concludes that "direct evidence that is compatible with Shope's hypothetical transmission cycle is confined to the demonstration that adult lungworms can absorb virus, and appear to have receptors like those found in tissues capable of supporting multiplication. The other considerations discussed are theoretical and much of the data could also be used to suggest that Shope's thesis is incorrect. Unfortunately, there are no critical results by which a decision can be made".—R.M.

Greig, A. S., Bannister, G. L., Mitchell, D. & Corner, A. H. (1961). **Studies on pathogenic porcine enteroviruses. II. Isolation of virus in tissue culture from brain and feces of clinical cases.**—Canad. J. comp. Med. 25, 142-150. [Authors' summary modified.] 3258

Three isolations of virus were made from brain and faeces of three outbreaks of encephalomyelitis in baby pigs in Ontario. The three viruses were antigenically identical, and are probably enteroviruses. They are serologically different from the virus of Teschen disease and may be different from the polio-encephalomyelitis viruses isolated in England by Betts (1960). The causal relationship between the viruses isolated and the disease in baby pigs has not been satisfactorily established.

Mantovani, A., Piccolino, G., Restani, R., Sciarra, D. & Taglia, L. (1961). **Observations on an outbreak of disease in dogs asso-**

ciated with the viruses of both canine distemper and infectious canine hepatitis.—J. Small Anim. Pract. 1, 268-272. [Authors' abstr. modified.] 3259

An outbreak of disease with 20 deaths was observed in an Italian kennel of 150 dogs. The viruses of both canine distemper and of infectious canine hepatitis were isolated from a single dog. Epidemiology and symptoms suggested that the initial outbreak was produced by hepatitis virus, complicated by distemper.

Clec'h, L. (1961). Au sujet d'une épizootie atteignant surtout les chiens adultes, et son identification avec la "rhino-amygdalite contagieuse du chien". [**Contagious rhinotonsillitis of dogs.**]—Bull. Soc. vét. Prat. 45, 134-140. 3260

An account of an outbreak of contagious rhino-tonsillitis. The disease was more frequent in adult than in young dogs and caused heavy mortality. It started with cough, rhinitis or laryngitis, followed by systemic symptoms and respiratory and nervous complications. Of 30 dogs five did not respond to treatment. Complete recovery within 4 days (with one relapse), was obtained in all dogs treated with i/m or i/p inj. of 10 ml. of a soln. containing 1.0 g. chloramphenicol and 50 mg. deltahydrocortisone, the first two days, and 5 ml. the next two days.—T.E.G.R.

Pridham, T. J. (1961). **Simultaneous immunization of mink against virus enteritis, distemper and botulism.**—Canad. vet. J. 2, 212-216. [Summary in French. Author's summary modified.] 3261

Newly-weaned mink were not affected adversely by simultaneous injections of distemper and virus enteritis vaccines and botulinum toxoid at separate body sites. They were resistant to virus enteritis and botulism as early as 5 weeks after immunization and at pelting time, about 4½ months after immunization. Seven weeks after inoculation they were fully resistant to virulent distemper virus that killed all 3 unvaccinated controls, and after 5 months to a distemper challenge that killed one of 5 unvaccinated controls.

Rowe, W. P. & Capps, W. I. (1961). **A new mouse virus causing necrosis of the thymus in newborn mice.**—J. exp. Med. 113, 831-844. [Authors' summary modified.] 3262

A virus recovered from laboratory and wild mice induces non-fatal disease in infant mice, characterized by acute massive necrosis

of medulla and cortex of the thymus, which is followed by restoration of essentially normal structure with scarring. Intranuclear inclusion bodies are produced. Virus may persist in tissues of convalescent mice for many months. Electron micrographs of the thymus showed characteristic nuclear and cytoplasmic particles. [Five plates of illustrations.]

Quiroz Vega, C. A. (1961). Estudio de una cepa de virus Newcastle. Sus características lentogénicas y propiedades inmunológicas. [**Properties of a strain of Newcastle disease virus isolated in Venezuela.**]—Rev. vet., venez. 10, 207-217. 3263

Over 7,000,000 doses of the H 580 attenuated strain of Newcastle disease virus have been given to chicks by the intranasal route in Venezuela. Immunity is estimated to last about 10 months.—M.G.G.

von Sprockhoff, H. (1961). Zur Vereinheitlichung der Technik des Hämagglutinations- und des Hämagglutinationshemmungstestes bei der atypischen Geflügelpest. [**Standardization of the haemagglutination and haemagglutination-inhibition tests in Newcastle disease.**]—Mh. Tierheilk. 13, 53-63. 3264

A discussion on the techniques, sources of error and factors influencing results of the two tests, stressing the desirability of standardization. Recommendations were made for standard solutions and suspensions and for uniform reading of results.—E.G.

Mayr, A. (1961). Züchtung des NDV-Stammes Hitchner B<sub>1</sub> in Zellkulturen aus Schweinenieren. [**Cultivation of Newcastle disease virus Hitchner B<sub>1</sub> in pig kidney cell culture.**]—Zbl. VetMed. 8, 201-213. [Summaries in English, French and Spanish.] 3265

The strain grew well in pig kidney cell cultures, reaching peak titres of 10<sup>-7</sup> to 10<sup>-8</sup> during the first half of the period of cell damage. Fifty consecutive passages were made, during which the virulence for culture cells increased slightly, but that for chicks, fowls and pigs appeared unaltered. The harvest was similar to that in egg fibroblast cultures, but less than that in chick embryos.

—M.G.G.

Schiavo, A. (1960). Ricerche sull'influenza della "muta" nella produzione di anticorpi antiemoagglutinanti nell'immunizzazione anti-pseudopestosa dei polli. [**Effect of moult on immunization against Newcastle disease.**]—

Acta med. vet., Napoli 6, 471-478. [Summaries in English, French and German.] 3266

After vaccination with inactivated vaccines H-I antibody titres of fowls in moult were lower and persisted for a shorter period than those of birds still in lay.—T.E.G.R.

Schmittiel, E. (1961). Versuche zur Konservierung des Psittakose-Virus durch die Vakuumgefriertrocknung. [**Preservation of psittacosis virus by vacuum freeze-drying.**] —Zbl. Bakt. I. (Orig.) 181, 446-450. [Summaries in English, French, Spanish and Russian. English summary modified.] 3267

A solution of 7.5% glucose in skim milk served as a suspension medium for preserving the infectivity of psittacosis virus to a high degree, whether virus was treated by freeze-drying or by freezing at  $-15^{\circ}\text{C}$ . Freeze-dried preparations always yielded higher infectivity titres than frozen suspensions.

Luginbuhl, R. E. & Black, F. L. (1961). **Applications of primary cell cultures in the study of animal viruses. I. The isolation and characterization of bovine and avian enteric viruses.** —Yale J. Biol. Med. 33, 339-349. 3268

Viral isolates were obtained from the faeces of 26 of 111 cattle in calf kidney cell cultures. All except one of the isolates were cytopathic and formed plaques in monkey kidney cells. Examination of the plaques revealed that 21 of the isolates contained a mixture of agents. Three plaque types predominated. Serological tests revealed

See also absts. 3444 (report, Canada); 3445 (report, Australia); 3446 (report, Rhodesia and Nyasaland Federation); 3450 (laboratory guide in virology).

## IMMUNITY

Uhr, J. W. & Baumann, J. B. (1961). **Antibody formation. I. The suppression of antibody formation by passively administered antibody. II. The specific anamnestic antibody response.**—J. exp. Med. 113, 935-957 & 959-970. [Abst. from authors' introduction.] 3270

Previous studies of g.pigs sensitized by injection of antigen-antibody complexes have shown that challenge with a sufficient dose of specific antigen transiently abolishes delayed-type skin reactivity and simultaneously induces an accelerated type of antibody response. G.pigs with delayed-type hypersensitivity to bovine serum albumin show an immune elimination of specific antigen whereas normal g.pigs do not.

Diphtheria toxin-antitoxin precipitates formed in antitoxin excess can sensitize g.pigs,

differences between these 3 types. Sera from some of the 26 cattle yielding the enteric viruses neutralized the 3 types of poliomyelitis virus, Coxsackie virus types B2 and B5 and ECHO virus type 2. But there was no apparent association between the cattle agent isolated and the human agent neutralized.

—M.G.G.

Roshdy, M. A. (1961). **Observations by electron microscopy and other methods on the intracellular rickettsia-like microorganisms in Argas persicus Oken (Ixodoidea, Argasidae).** —J. Insect Path. 3, 148-166. [Author's summary modified.] 3269

Rickettsia-like micro-organisms were observed in the Malpighian tubule cells and developing oocytes of the fowl tick by conventional and histochemical staining methods and by electron microscopy. Ribonuclease enzyme treatment or Feulgen's stain were particularly valuable methods. Ribonucleic acid and deoxyribonucleic acid appear to be present in the groups of organisms commonly found packed within limiting membranes, and possibly in the individual organism, but exact correlation with structure as seen by the electron microscope is not yet conclusive. Electron micrographs of thin sections of Malpighian tubules and oocytes illustrate the fine structure of both grouped and individual organisms and these findings are compared with the structure reported for species of *Rickettsia*.

rats, and rabbits for a highly efficient secondary antitoxin response. This sensitization may occur without detectable antitoxin formation to the primary antigenic stimulus.

Hayden, A. R. & Becker, E. L. (1961). **Antigen-antibody reactions in agar. VII. The application of gel precipitin analysis to the quantitative determination in absolute weight units of mixtures of antigens and their antibodies.**—Arch. Biochem. 93, 631-640. [Authors' abst. modified.] 3271

The procedure described (on pages 617-630 of the same journal) for obtaining antigen and antibody concentrations in absolute weight units wholly from gel precipitin data was applied to a bovine  $\gamma$ -globulin sample which was a mixture of three antigens and their respective antibodies.

The results obtained agreed with those obtained by other methods. Two of the antigens in the bovine  $\gamma$ -globulin preparation were shown to have the electrophoretic mobility of  $\gamma$ -globulin.

Dunsford, I., Lodge, T., McDermid, M. & Gilmour, D. G. (1961). **Incomplete antibodies to chicken red cell antigens.**—*Nature*, Lond. 190, 544. 3272

Sera containing complete agglutinins were diluted 1/4, heated for 10 min. at 70°C. and tested by a spin antiglobulin technique using anti-chicken serum. All 7 showed evidence of incomplete antibodies. Sera from 4 of 12 birds that had been inoculated with red cells were positive for incomplete antibodies in the antiglobulin test.—M.G.G.

Dineen, J. K. & Perry, B. T. (1960). **The immunological response produced in inbred mice following the isologous and homologous transfer of antigenically stimulated spleen cells.**—*Aust. J. exp. Biol. med. Sci.* 38, 375-387. [Authors' summary modified.] 3273

Antigenically stimulated spleen cells from C3H and C57B1 mice were transferred to isologous and homologous recipients and both the immediate appearance of antibody and the response to a challenge injection of antigen 11-12 weeks later were studied.

Antibody was detected as early as two days after isologous transfer of C57B1 cells, but none appeared after homologous transfer. With isologous transfer of C3H cells there was either a delay up to six days before first appearance of antibody, or no response.

Following late challenge most of the mice that received isologous cells gave a typical secondary response. No secondary type responses were obtained with homologous combinations.

Bertok, E. I. & Baker, B. E. (1961). **Transmission of milk protein hypersensitivity from mother to offspring.**—*Canad. J. comp. Med.* 25, 98-102. 3274

Reconstituted skim milk and alpha-casein were the two protein substances injected i/p or i/m into female g.pigs at periods varying from 5 to 348 days before parturition. The young born to these animals were challenged from 6 hours to 135 days after birth with either one or other of the protein products to determine whether the sensitivity had been transferred to the offspring. Although sensitivity to either protein had not been transferred through the colostrum, it had been

transferred to at least three successive litters during their foetal life, and the state of passive sensitivity persisted for about four months.

—R. V. L. WALKER.

Bussolati, C. & Santi, A. (1961). **Sistema nervoso vegetativo e immunità. 2ª Nota sperimentale. [The autonomic nervous system and immunity.]**—*Clin. vet.*, Milano 84, 102-106. [Summary in English.] 3275

The effect of atropine on specific antibody production was studied. In goats treated with salmonella vaccine there was an increase in specific antibodies; in goats and rabbits vaccinated with *Brucella melitensis* there was only a slight increase; while in rabbits inoculated with O streptolysin there was no significant increase.—T.E.G.R.

Dineen, J. K. & Perry, B. T. (1960). **Studies on the nature of antibody production during the in vitro culture of lymphoid tissues.**—*Aust. J. exp. Biol. med. Sci.* 38, 363-374. [Authors' summary modified.] 3276

A simple and reproducible technique for the study of the production of antibodies by cultured lymphoid tissues has been described.

Cellular and extra-cellular fluid titres were estimated by Boyden's tanned cell technique, and a sharp rise in the fluid antibody titre (up to 300-fold) was observed during the first 18 to 24 hours of culture, while the cellular titre remained at a low constant level. The results of this study suggest that antibody-producing cells store little or no classical antibody.

Chloramphenicol in the culture medium inhibited antibody production, while ribonuclease did not specifically inhibit it. Absence of Ca ions from the culture medium was also inhibitory and this effect was reversed when Ca ions were restored in physiological concentration.

Attempts to stimulate antigenically spleen and popliteal node tissues during culture were not successful.

Mitchison, N. A. (1961). **Immunological tolerance and immunological paralysis.**—*Brit. med. Bull.* 17, 102-106. 3277

A review of the theories of immunological tolerance acquired by very young animals, including split tolerance, in which some but not all the antigens in the original inoculum are tolerated, and of immunological unresponsiveness acquired by adult animals to chemical allergens, polysaccharides, plasma proteins, and grafts in parabiosis.—M.G.G.

See also absts. 3133 (anthrax); 3144 (swine erysipelas); 3166 (avian salmonellosis); 3170 (brucellosis); 3175-3184 (leptospirosis); 3185-3189 (clostridial infections); 3216-3222 (F. & M. disease); 3224-3228 (rabies); 3228-3232 (fowl pox); 3233 (interferon); 3234 (Eastern encephalitis); 3236 (arboviruses); 3240 (rinderpest); 3247-3250 (swine fever); 3261 (simultaneous immunization of mink against virus enteritis, distemper and botulism); 3263-3266 (Newcastle disease); 3305-3306 & 3315 (helminth parasites).

## PARASITES IN RELATION TO DISEASE [GENERAL]

Lapage, G. (1961). A list of the parasitic Protozoa, helminths and Arthropoda recorded from species of the family Anatidae (ducks, geese and swans). — *Parasitology* 51, 1-109. 3278

The list summarizes reports from world scientific literature on both domestic and wild species of ducks and geese. There are 692 references.—R.M.

Buttram, J. R. & Arthur, B. W. (1961). Absorption and metabolism of Bayer 22408 by dairy cows and residues in the milk.—J. econ. Ent. 54, 446-451. [Authors' abst. modified.] 3279

P<sup>32</sup>-labelled Bayer 22408 (O, O-diethyl O-naphthalimido phosphorothioate) was applied dermally as a 0.5% emulsion to two cows. Detectable quantities of the intact insecticide were isolated from the milk the first 6 days after treatment. Bayer 22408 equivalents in the milk were about 10 times higher than the actual Bayer 22408. No oxygen analogue of the parent compound was isolated from milk, but it was the predominant non-hydrolysed product of the faeces. The faecal metabolites were toxic to stable fly larvae, but not to house fly larvae.

lorphon) solution and Asuntol (coumaphos), known as Neguvon "A", was very effective when given orally to sheep infested with nostril fly. The optimum dosage in terms of Neguvon was about 60-70 mg./kg., and it was recommended that treatment be given every four weeks.—W. N. BEESLEY.

## PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Klimeš, B. (1961). Tilgung der Federlinge durch perorale Verabfolgung von DDT. [Control of lice by oral administration of DDT to hens.]—*Angew. Parasit.* 2, 19-22. [Summaries in English and Russian. English summary modified.] 3280

The lice *Oulocrepis dissimilis* and *Menopon gallinae*, but not red mites, were killed on laying hens and chicks within 4-5 days after oral administration of DDT tablets at a dose of 0.1 g./kg. body weight. Invasion by lice was inhibited by adding DDT to the feed at 1.5 g. per kg. of feed for five days, and no harmful effects were noted on the health of the birds or on egg production.

Wilkinson, P. R. & Norris, K. R. (1961). Australian sheep blowfly infesting a bullock.—*J. Aust. Inst. agric. Sci.* 27, 25-26. 3281

A record is presented of the first known case of *Lucilia cuprina* causing true cutaneous myiasis of a bovine. It occurred in a bullock which had been kept in a rain-proof stall for 15 months while cultures of *Boophilus microplus* were raised on it.—A. CULEX.

Stampa, S. & Pols, J. W. (1960). Feldteste mit dem Präparat Neguvon "A" auf Wirksamkeit gegen die Maden der Nasenbremse des Schafes (*Oestrus ovis* L.) unter süd-afrikanischen Verhältnissen. [Field tests with Neguvon "A" against *Oestrus ovis* infestation in sheep in South Africa.]—*Vet.-med. Nachr.* No. 4 pp. 239-242. 3282

A 10:1 mixture of Neguvon (trich-

Burnett, G. F., Yeo, D., Miller, A. W. D. & White, P. J. (1961). Aircraft applications of insecticides in East Africa. XIII.—An economical method for the control of *Glossina morsitans* Westw.—*Bull. ent. Res.* 52, 305-316. [Authors' summary modified.] 3284

In 11 sq. miles of thorn savannah and thicket in Tanganyika an aircraft was used between July 1959 and March 1960 to apply a

Back-rubber applications of 5% Ruelene in oil failed to control the larvae. Spray-dip machine applications of Co-Ral and Ruelene were moderately effective. No increase in gains in weight attributable to the systemic warble control was observed.

2.5% solution of dieldrin in oil at the rate of 0.125 gal. per acre in an attempt to eradicate *Glossina morsitans* and *G. pallidipes*. Eight applications were made at about four-weekly intervals. Swath width was 55 yd., and the aircraft emitted the insecticide as a coarse aerosol of volume median diameter 50–60  $\mu$  as it flew in both directions over the block.

Kills of *G. morsitans* per application appeared to be 85% or higher; *G. pallidipes* was reduced by 99.5%. Numbers of fly were reduced sufficiently for large-scale settlement with cattle, which should complete the work of exterminating the fly.

Wejda, E. (1961). Dilatatio et stenosis oesophagi bei einem Fohlen (hervorgerufen durch wandernde Gastrophiluslarven). [Dilatation and stenosis of the oesophagus in a foal, resulting from migrating *Gasterophilus* larvae.]—Mh. VetMed. 16, 317–318. 3285

A 4-month-old foal that had great difficulty in swallowing was slaughtered. The upper half of the oesophagus was dilated and impacted with food, the lower half was constricted to an internal diameter of only 0.65 cm. Several *G. pecorum* larvae were found at the top of the constricted portion. Histological examination of the constricted portion revealed hypertrophy of the musculature as a result of myositis.—M.G.G.

Quintero G., L. A. (1958). Gasterofilosis equina en Venezuela. [*Gasterophilus* species of horses in Venezuela.]—Rev. Med. Vet. Parasit., Maracay 17, 167–190. 3286

*Gasterophilus intestinalis* was found in up to 98% of slaughtered horses, and *G. veterinus* was found in about 70%. An intrapalpebral test using a saline extract of the larvae gave strong reactions in all of 10 infested horses. In 3 uninfested horses the reactions were weaker. Q. tested the action of 50 substances on *Gasterophilus* larvae.

—M.G.G.

I. Anthony, D. W., Hooven, N. W. & Bodenstein, O. (1961). Toxicity to face fly and house fly larvae of feces from insecticide-fed cattle.—J. econ. Ent. 54, 406–408. 3287

II. Eddy, G. W. & Roth, A. R. (1961). Toxicity to fly larvae of the feces of insecticide-fed cattle.—Ibid. 408–411. [Authors' absts. modified.] 3288

I. Coumaphos (Co-Ral), Bayer 22408 (*O*, *O*-diethyl *O*-naphthalimido phosphorothioate), and ronnel were administered to heifers in the grain ration for 5 consecutive

days to determine whether the treated animals would produce droppings that were toxic to the larvae of face flies (*Musca autumnalis*) and house flies (*Musca domestica*). Coumaphos and Bayer 22408 completely inhibited the development of face fly larvae at dosages of 1 and 0.5 mg./kg. body wt., and house-fly larvae failed to survive at the 1 mg./kg. dosage. Faeces from animals fed ronnel at 5 mg./kg. gave complete kill of face-fly and house-fly larvae; at 2.5 mg./kg. it was effective against the larvae of face flies, but not house flies.

II. Studies were conducted on the toxicity to newly-hatched house fly larvae of the faeces of cattle fed 25 different compounds, incorporated in the diet for 5 days. Samples of faeces were collected during feeding and after it was discontinued. Fourteen of the 25 compounds were not completely lethal to the larvae at the doses tested. Bayer 22408 and coumaphos (Co-Ral), the two most effective, were lethal to the larvae at doses as low as 1 mg./kg. body wt. Comparative data were also given on the susceptibility of newly-hatched larvae of the house fly, stable fly (*Stomoxys calcitrans*), and horn fly (*Siphona irritans*) to four of the more effective insecticides.

Dobson, R. C. & Huber, D. A. (1961). Control of face flies (*Musca autumnalis*) on beef cattle in Indiana.—J. econ. Ent. 54, 434–436. [Authors' absts. modified.] 3289

Various insecticides were applied to cable back-rubber devices for the control of face fly. Numbers of flies were adequately reduced by methoxychlor, toxaphene, DDT and ronnel. 5% Crag Fly Repellent (butoxy polypropylene glycol), DDVP and dimethoate were ineffective.

Anon. (1961). Note sur les Culicoides. [Notes on Culicoides.]—Bull. Off. int. Epiz. 55, 304–314. 3290

A bibliography of the Culicoides (50 references).—M.G.G.

Ivey, M. C., Roberts, R. H., Mann, H. D. & Claborn, H. V. (1961). Lindane residues in chickens and eggs following poultry house sprays.—J. econ. Ent. 54, 487–488. [Authors' absts. modified.] 3291

Two experiments were done to determine lindane residues in the fat and eggs of fowls confined in houses sprayed with 1% suspensions of the insecticide. In the first (during summer) the interior of a poultry

house was thoroughly sprayed at the rate of 1 gal. per 100 sq. feet. In the second (during winter) a light application was made at the rate of 1 gal. per 1,000 sq. feet. The heavy application caused residues in the fat that averaged 131 p.p.m. one week after the house was sprayed and 97 p.p.m. at 16 weeks. The residues in the eggs varied from 13 to 20 p.p.m. during 12 weeks, but no decrease was evident at 12 weeks. Although the light application caused lower amounts of lindane in both fat and eggs, significant residues were still present in the eggs 16 weeks and in the fat 20 weeks after the house was sprayed.

Gray, W. J. (1961). *Rhipicephalus evertsi*: notes on free-living phases.—Bull. epiz. Dis. Afr. 9, 25-27. [Summary in French.] 3292

The two-host *R. evertsi* is common in N. Rhodesia. Fertilized replete females may wander 12 metres seeking an oviposition site (in a grass tussock or surface litter, or 1-2 cm. below ground). The pre-oviposition period is longer at lower temperatures. Eggs hatch in about 19-23 days but may remain viable after 80 days' submersion in water. Larvae spend from 4 to about 20 days at ground level before ascending vegetation, where they may remain up to a further 175 days awaiting a suitable host. Overwintering may occur in either the larval or egg stage.—W. N. BEESLEY.

Lambelin, G. (1960). Anwendung des Asuntol als Acarizid. [Use of Asuntol as acaricide.] —Vet.-med. Nachr. No. 4 pp. 243-247. 3293

Trials with Asuntol (coumaphos) dips were carried out against *Rhipicephalus*

*appendiculatus* (African brown tick) in the Congo Republic. A concentration of 0.05% was effective, eradicating the infestation within 24 hours and preventing re-infestation for 2-3 weeks.—W. N. BEESLEY.

Dualde Perez, V. (1961). La fórmula leucocitaria en la sarna sarcóptica de la cabra. [The leucocyte count in goats with sarcoptic mange.]—Bol. Inf. Cons. Col. vet. Esp. 8, 389-391. [Summaries in English, French and German.] 3294

Pronounced eosinophilia was found in the blood of 7 of 10 goats with sarcoptic mange.—M.G.G.

Hoyte, H. M. D. & Mason, R. S. (1961). *Sarcoptes scabiei* in the dingo (*Canis antarcticus*).—Aust. vet. J. 37, 53-54. 3295

A count was made of the number of mites and eggs infesting 1 sq. cm. of skin from the ribs, forehead, belly and external surface of the ear of a dingo pup with a natural infestation. Most were found on the ribs (352 mites and 59 eggs) and forehead (98 mites and 21 eggs).—M. D. MURRAY.

Gaud, J. (1961). Two new species of feather mites (Analgesoidea) from poultry in India.—Indian vet. J. 38, 65-70. 3296

G. recorded two new species of feather mites from Madras. These were *Dermoplyphus alwari* (Dermoplyphidae) from ducks, and *Megninia bakeri* (Analgesidae) from fowls. He described the morphology of males and females of both these species.

—H. M. BHATIA.

See also absts. 3205 (elimination of *Trypanosoma melophagium* from sheep and keds); 3236 (arboviruses); 3445 (report, Australia); 3446 (report, Rhodesia and Nyasaland Federation).

## PARASITES IN RELATION TO DISEASE [HELMINTHS]

Guilhon, J. & Graber, M. (1961). Propriétés fasciolicides de l'hexachlorohydroxydiphénylméthane et sa toxicité à l'égard du mouton. [Action of hexachlorophene on liver fluke and toxicity for sheep.]—Bull. Acad. vét. Fr. 34, 119-124. 3297

Trials at Alfort and at Fort-Lamy in 14 sheep infested with *Fasciola gigantica*, 4 with *F. hepatica* and 13 uninfested sheep revealed that a single oral dose of 10 mg. of hexachlorophene per kg. body wt. is lethal for *F. gigantica* but not for *F. hepatica*. A single dose of 40 mg./kg. or more killed 75% of African sheep, but the lethal dose for French sheep was 100 mg./kg. or more.—M.G.G.

Polishchuk, F. G. (1961). [Acute fascioliasis in nutria.] —Krolikovod. Zverovod. No. 2 pp. 22-23. [In Russian.] 3298

Spontaneous *F. hepatica* infestation of nutria on a fur farm was believed to have been acquired from the drinking water. Acute and chronic forms were seen. Acute fascioliasis was manifested by loss of appetite, rapid emaciation, dullness and sometimes fever (39-40°C.). Fifty affected animals were treated with hexachloroethane at 0.2 g./kg. body wt. given by mouth (mixed in a ball of bread) and repeated twice at intervals of two days. Three died, compared with 26 of 50 untreated controls, and 7 of 50 given the drug at

0.4 g./kg. A prophylactic dose (0.4 g./kg.) was given to all nutria having fluke eggs in their faeces.—R.M.

Deschiens, R. & Poirier, M. (1961). Incidence de la pipérazine sur les hyperéosinophilies sanguines expérimentales du cobaye. [**Effect of injected piperazine on parasitic eosinophilia in guinea-pigs.**]—C.R. Acad. Sci., Paris **252**, 1392-1393. 3299

Eosinophilia was produced in g.pigs by a course of seven injections of aqueous extract of *Fasciola hepatica*. They were then given seven i/m inj. of diethylcarbaryl-1-methyl-4-piperazine at 20 mg./kg. body wt. on alternate days. This treatment did not reduce the eosinophilia, although it did reduce eosinophilia provoked by extracts of pepper and tobacco.—R.M.

Kuba, N. (1961). [**Histology of lesions caused by eggs of *Schistosoma japonicum* in domestic and laboratory mammals.**]—Mem. Hyogo Univ. Agric. **3**, No. 3 pp. 48. [In Japanese. Summary in English.] 3300

An account of the histology of the lesions caused by eggs of *S. japonicum* in the liver, intestine and lung of 49 naturally and experimentally infected mammals. There are 48 photomicrographs.—M.G.G.

Romboli, B. & Pierotti, P. (1960). L'idatidosi degli equidi. [**Hydatid disease of horses, in Italy.**]—Ann. Fac. Med. vet. Pisa **13**, 67-78. [Summaries in English and French.] 3301

During 1956-1959, echinococcus cysts were observed in 3,714 of 448,085 horses, donkeys and mules slaughtered in Italy and Sicily. The liver was affected in 98% and the lungs in 2%. Incidence was high in Sicily and southern Italy and much lower in central and northern Italy.—T.E.G.R.

Chabassol, C., Piette, J.-M. & Montagne, P. (1960). Note sur l'échinococcose en Tunisie. [**Echinococcus infestation in cattle, sheep and pigs in Tunisia.**]—Rev. Corps Santé des Armées **1**, 915-921. 3302

A survey of 866 cattle, 140 sheep and 99 pigs slaughtered in the Bizerta area during 6 months revealed a high incidence of echinococcus. The liver was affected in 744 cattle, 80 sheep and 14 pigs; lungs in 583 cattle, 33 sheep and 5 pigs; kidneys in 164 cattle, in 5 pigs but not in sheep. In man the disease was rare in Europeans while it was reported in 83 Moslems during 1 year. Control measures are discussed.—T.E.G.R.

Romboli, B. & Casarosa, L. (1960). Iperplasia polipoide della cuticolare in cisti da echinococco negli ovini e nei bovini. [**Polypoid hyperplasia of the cuticular membrane of echinococcus cysts in sheep and cattle.**]—Ann. Fac. Med. vet. Pisa **13**, 55-66. [Summaries in English and French.] 3303

A discussion, with illustrations, of observations on cuticular hyperplasia and papillomatosis of echinococcus cysts.

—T.E.G.R.

Whitten, L. K. & Shortridge, E. H. (1961). **Three unusual cases of secondary hydatid cysts of the peritoneal cavity of the pig, dog, and cat.**—N. Z. vet. J. **9**, 7-8. 3304

Multiple secondary hydatid cysts were found in the peritoneal cavity of a sow, a bitch and a female cat.—M.G.G.

Taylor, E. L. (1961). **Acquired immunity and helminthic disease.**—J. Helminth. R.T. Leiper Suppl. pp. 175-178. 3305

Farmers should be advised, not to preserve their grazing animals from exposure to strongyloid parasites, thus rendering them highly susceptible to infection, but to allow them to develop resistance at an early age reinforced by repeated contact in adult life.

—M.G.G.

Soulsby, E. J. L. (1961). **Some aspects of the mechanism of immunity to helminths.**—J. Amer. vet. med. Ass. **138**, 355-362. 3306

To develop immunity to helminths, the host requires antigens not only from viable parasites, but parasites which have reached a certain point of development. The moulting period appears to be an important time for the release of antigens. Defence systems of hosts utilize not only free humoral antibodies, but also local cellular reaction and attack by eosinophiles.—M.G.G.

Gordon, H. McL. (1960). **Nutrition and helminthosis in sheep.**—Proc. Aust. Soc. Anim. Prod. **3**, 93-104. [Author's summary modified.] 3307

The inter-relationships between nutrition and helminthosis are discussed and ten general principles (illustrated by experimental work, chiefly with grazing animals) are stated.

Perhaps the most important principle is the necessity to differentiate between resistance to the establishment of an infestation and resistance to the effects of the established infestation. Recent experiments with *Trichostrongylus colubriformis* show that a high plane of nutrition does not necessarily prevent

the establishment of the infestation, but may mitigate its effects.

The precise reasons why sheep on well-established sown pastures often harbour light worm burdens, even though run at a high rate of stocking, remain to be determined. Some of the factors which may be involved are discussed.

Pavlov, P., Tatarov, B., Lazarov, E., Stojev, P. & Dimitrov, G. (1961). Skúmanie životaschopnosti nematódnych foriem — vajčiek a lariev — v silážovanom krmive. Skúmanie životaschopnosti neembryonovaných a embryonovaných vajčiek *Trichocephalus ovis*. [Viability of nematode ova and larvae in silage. Survival of embryonated and non-embryonated ova of *Trichocephalus ovis*.]—*Vet. Čas.* 10, 266-270. [In Slovak. Summaries in German and Russian.] 3308

Embryonated and non-embryonated *Trichocephalus ovis* eggs lost their virulence after 32-36 days in silage.—E.G.

Brunsdon, R. V. (1960). Studies on the epizootiology of *Nematodirus* infestation in sheep in New Zealand. — *N.Z. J. agric. Res.* 3, 772-778. [Author's summary modified.] 3309

Epidemiological studies over three years revealed a remarkable regularity in the occurrence and course of *Nematodirus* infestation in lambs. Observations of larval populations on pasture have revealed a small larval peak in spring followed by a larger peak in autumn. A trial in autumn 1959 showed the importance of the autumn larval peak for susceptible animals. Differences were found in the duration of spring- and autumn-acquired infestations, and evidence is presented of some measure of age resistance.

Mayaudon T., H. (1958). Tratamiento de la gastro-enteritis parasitaria de los caprinos. [Treatment of parasitic gastro-enteritis of goats.]—*Rev. Med. Vet. Parasit., Maracay* 17, 51-54. 3310

Goats with clinical *Haemonchus* infestation that did not respond well to phenothiazine or copper sulphate plus nicotine sulphate were treated successfully with a soln. of 4 parts copper sulphate and 1 part sodium arseniate in 1.2% hydrochloric acid. The animals were fasted for 12 hours before and 2 hours after dosing.—M.G.G.

Favati, V. (1960). Un metodo coprologico quantitativo nelle broncopolmoniti verminose degli ovini. [Diagnostic value of the larval count in the faeces of sheep with lungworms.]

—*Ann. Fac. Med. vet. Pisa* 13, 8-12. [Summaries in English and French.] 3311

A description is given of a modification of the technique employed by Pouplard *et al.* (1959) for the larval count in the faeces of sheep with lungworms. Faecal samples from each animal twice daily furnish reliable data on the degree of infestation while the mean margin of error is not considered significant. —T.E.G.R.

Ewing, S. A. & Todd, A. C. (1961). *Metastrongylus* in the field: species and sex ratios of the parasites, preferential location in respiratory apparatus of the host, and concomitant lesions. — *Amer. J. vet. Res.* 22, 606-609. 3312

Among 100 naturally infected midwestern pigs, *Metastrongylus apri* was found in 62%, *M. pudendotectus* in 37% and *M. salmi* in 1%. Female worms outnumbered males by about 3 to 2. In 76% of the infections, *M. apri* and *M. pudendotectus* occurred in association; in 11% all three species were present. The preferential location was the diaphragmatic lobes. Emphysema appeared to be the most characteristic lesion associated with lungworm infection, but chronic inflammatory responses were also usually present.—A. ACKROYD.

Sasaki, N. & Sano, K. (1961). [Treatment of *Metastrongylus* infestation in pigs. I. Experiments on guinea-pigs with arsanilic acid, cyanacethydrazide, isoniazid and diethylcarbamazine.] — *J. Jap. vet. med. Ass.* 14, 92-96. [In Japanese. Summary in English.] 3313

Diethylcarbamazine removed 97% and 99% of *M. elongatus* from experimentally infected g.pigs when given i/m in a daily dose of 100 mg./kg. for 5 and 10 days respectively; two courses of treatment with 40 mg./kg. daily of cyanacethydrazide s/c for 3 days removed 74%; simultaneous treatment with these two drugs removed 100%; isoniazid at 5 mg./kg. i/m daily for 3 days removed 74%; and arsanilic acid at 5 mg. orally per animal daily for 10 days removed 75%.

—M.G.G.

Barbiera, A. (1960). Su alcuni casi di strongilosi polmonare della lepre. Indagini parassitologiche. [Pulmonary strongylosis in hares, in Italy.]—*Ann. Fac. Med. vet. Pisa* 13, 19-25. [Summaries in English and French.] 3314

An account of *Protostrongylus rufescens* var. *cuniculorum* in hares on a game preserve in Italy.—T.E.G.R.

Casarosa, L. (1960). Test intradermico nella microascaridiosi sperimentale da *Toxocara canis* del suino e della cavia. [**Intradermal test in experimental *Toxocara canis* infection in pigs and guinea-pigs.**]—Ann. Fac. Med. vet. Pisa 13, 1-7. [Summaries in English and French.] 3315

Pigs aged 2-3 months and g.pigs weighing 200-300 g. were infected orally with embryonated eggs of *Toxocara canis*. The intradermal test, with an antigen prepared from *Ascaris lumbricoides*, was applied to the pigs 30 days and to the g.pigs 27 days after infection. Positive reactions occurred after one hour and were present at the 8th and 24th hours in all test animals except one pig which had been affected with *Trichuris suis* before the experiment. Results confirmed Soulsby's findings with natural multiple parasitic hepatitis in pigs [V.B. 28, 1133 and 1488].

—T.E.G.R.

Favati, V. & Marrenghi, O. (1960). Su alcuni casi di epatite parassitaria c.d. multipla spontanea del suino associata a polmonite a focolai siero-emorragico-eosinofili. [**Parasitic hepatitis associated with pneumonia in pigs.**]—Ann. Fac. Med. vet. Pisa 13, 13-18. [Summaries in English and French.] 3316

In two slaughter pigs with multiple parasitic hepatitis there were also lung lesions, which are described and discussed; it is considered that these may be due to parasitism.—T.E.G.R.

Day, E. J., Horton, A. M. & Hill, J. E. (1961). **Anthelmintic value of hygromycin B when used in broiler rations and its effect along with certain other drugs on the performance of broilers.**—Poult. Sci. 40, 417-422. 3317

Hygromix, containing 2 and 4 g. of hygromycin A and hygromycin B activity, was used at two levels in broiler rations to furnish 4 to 8 g. of hygromycin B per ton of feed, in the presence and absence of 3-nitro-4-hydroxyphenylarsonic acid. Results show that the hygromycin B effectively controlled large roundworms. Differences in the results were not statistically significant. Growth rate was significantly improved in each case except using the highest level of Hygromix (0.1%) in the absence of 3-nitro-4-hydroxyphenylarsonic acid. Feed utilization was improved in all cases except in the birds

receiving the highest level of Hygromix. The large roundworm load of birds fed the basal ration containing inadequate vitamin A (800 i.u./lb.) was 5 times as great as in those receiving adequate vitamin A (2,400 i.u./lb.). Hygromycin B (8 g./ton) did not provide complete protection from large roundworm in birds fed the low vitamin A basal ration. However it improved feed utilization but growth rate was not consistently improved. In the presence of adequate vitamin A, hygromycin B resulted in almost complete protection from large roundworms. It did not consistently improve growth rate and feed utilization in the presence and absence of tylosin (4 g./ton). The additives, procaine, penicillin, zinc bacitracin and tylosin added singly at the 4 g./ton level all improved growth similarly; but the differences were not significant.—BRENDA M. WILSON.

Wilson, T. (1961). **Filariasis in Malaya — a general review.**—Trans. R. Soc. trop. Med. Hyg. 55, 107-129. Discussion: pp. 130-134. 3318

For some time it has been known that *Brugia malayi* caused endemic filariasis in rural areas of Malaya. The periodic form of *B. malayi* is transmitted mainly by open-swamp species of *Mansonia* and by some anophelines. Natural infections in local animals were uncommon, although experimental infections were successful.

The semi-periodic form is transmitted mainly by swamp-forest species of *Mansonia*. Natural infections in local animals were common. In parts of Malaya this type behaves as a zoonosis. In the same areas animal infections with *B. pahangi* were common. It is not recognized as a natural infection in man, although it has been transmitted experimentally. Susceptibility of the human host to infection was apparently not related to race.—BRENDA M. WILSON.

Yarborough, J. H. & Doty, L. T. (1961). **An effective new microfilaricide for heartworms.**—Small Animal Clinician 1, 151-152. [Authors' summary modified.] 3319

In carefully observed experiments, 77 of 81 dogs infected with heartworm and previously treated with arsenamide to kill adult worms, were cleared of microfilariae by oral administration of dithiazanine iodide.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS  
[INCLUDING FOWL PARALYSIS]

Kronberger, H. (1961). Kritische Sichtung des dem Institute in den Jahren 1917-1959 eingesandten Geschwulstmaterials von Haus-säugetieren. [**Critical study of neoplastic material from domestic mammals, examined during 1917-1959 at the Institute of Veterinary Pathology, Leipzig University.**—*Mh. VetMed.* 16, 296-302. 3320

A report on 4,059 tumours. Tables show the incidence of the different types of tumour according to the animal species and parts of the body. The ratio of malignant to benign tumours was 2·3 : 1 in horses, 0·9 : 1 in cattle, 1·6 : 1 in sheep, 1·4 : 1 in goats, 1·1 : 1 in pigs, 1·2 : 1 in dogs, 5 : 1 in cats, and 1·7 : 1 in rabbits. The ratio of carcinoma to sarcoma was 1·7 : 1 in horses, 0·6 : 1 in cattle, 2·5 : 1 in sheep, 1·3 : 1 in dogs, 3 : 1 in cats, and 1 : 1 in goats, pigs and rabbits.—M.G.G.

Tokarnia, C. H. (1961). **Islet cell tumor of the bovine pancreas.**—*J. Amer. vet. med. Ass.* 138, 541-547. 3321

The literature on islet-cell tumours of the pancreas in animals (dog, cat, rat, mouse, cow) is reviewed, and a further case in a 10-year-old cow is reported. The animal was said to have suffered from nervous "attacks", of short duration, but of increasing frequency, for 3 months. It eventually became recumbent, with constant "attacks", and, 18 days before veterinary examination, had been subjected to perforation of the horn for "mal dos chifres" (the imaginary disease "hollow horn"). One "attack" occurred during examination, when the cow was turned over: its body suddenly became rigid, and it stretched out its four stiffened limbs, turned its head backwards, and rolled its eyes. The respiratory rate was accelerated, and the cow trembled slightly all over. The signs disappeared within some 30 sec. The owner permitted only 100 ml. of calcium borogluconate to be injected. The cow died overnight. At autopsy, apart from sinusitis, bronchopneumonia, and a liver abscess, there was found a neoplasm, measuring 10 x 7 x 4 cm., in the pancreas, with the histology of an islet-cell tumour, granules resembling those of the normal beta cells being present in the tumour cells. No metastases were found.

It is suggested that the convulsive signs observed may have been due to a prolonged hypoglycaemia.—E. COTCHIN.

Smith, H. A. & Fowler, R. O. (1961). **Mast cell tumors — its attempted treatment.**—*Sthwest. Vet.* 14, 125-127. 3322

In a 4-year-old female Cocker Spaniel, multiple cutaneous tumours, proved histologically to be mast-cell tumours, completely disappeared when the animal was treated for about 2 months with prednisone, 20 mg. intramuscularly every 2 weeks. The tumours in which more undifferentiated cells were now evident, reappeared about 2 months after stopping treatment but this time failed to respond to prednisone and the animal had to be destroyed. The fact that some neoplasms respond to cortisone similarly to inflammations suggests that causes may be similar.

—A. ACKROYD.

Möse, J. R. (1961). Versuche über die Wirkung apathogener Clostridien gegen verschiedene Tiertumoren. [**Action of non-pathogenic clostridia on various animal tumours.**—*Zbl. Bakt. I. (Ref.)* 179, 344. 3323

Complete or partial lysis of tumours was observed in animals infected i/v with spore suspensions of a strain of *Cl. amylobacter* [*Cl. butyricum*]. The organism multiplied only in the tumours. Other non-pathogenic clostridia lysed Ehrlich tumours in mice.

—M.G.G.

Podgurniak, Z. (1961). Leucosis eosinophila —jako nietypowa postać białaczki szpikowej u świni. [**Leucosis eosinophila—an atypical form of myeloid leucosis in a pig.**—*Med. Wet., Warszawa* 17, 201-205. [In Polish. Summaries in English and Russian.] 3324

A description of macro- and microscopic lesions in the kidney, liver, spleen, gluteal muscle and inguinal and sacral lymph nodes of a slaughtered pig.—M. GITTER.

Goube de Laforest, P. (1961). Adaptation des cultures d'organes embryonnaires de poulet à l'étude d'un virus (virus GAL) isolé de la souche RPL12 de la leucose aviaire. [**Action of GAL virus on cultures of embryonic organs of chicks.**—*C.R. Acad. Sci., Paris* 252, 2471-2472. 3325

The Gallus Adeno-Like virus [*V.B.* 28, 2931] produced in explants of liver, mesonephros, lung, intestine, gonads, lesions similar to those observed in chick embryos. It could be passaged in liver explants.—R.M.

## NUTRITIONAL AND METABOLIC DISORDERS

Adler, J. H., Nobel, T. A., Egyed, M. & Neuman, F. (1960). [**Some effects of feeding *Trigonella foenum-graecum* straw to cattle.**]—Refuah vet. 17, 122-125. In Hebrew. [In English p. 171.] 3326

Two steers aged 6 and 12 months fed entirely on *T. foenum-graecum* straw both became lame after three weeks and deteriorated progressively. The hind legs were affected first. There were also cardiac irregularities. The younger steer was destroyed after 37 days but the other was kept for nearly 9½ months, after which it died. For 4 of these months it received a normal diet, but this did not hinder the progress of the disease. The micro- and macroscopic P.M. lesions are described. The outstanding histological lesion was a marked degeneration of skeletal and cardiac muscle.

—E. J. CASTLE.

Reed, C. M. (1961). **Acute deficiency syndrome in dogs on beaver meat diet.**—Small Animal Clinician 1, 146-148. [Author's summary modified.] 3327

Five dogs developed symptoms varying from weakness, depression and lassitude to severe convulsions and other nervous symptoms following feeding of raw beaver meat as the sole source of nourishment for a month.

Bartley, E. E., Claydon, T. J., Fina, L. R., Hay, C. & Yadava, I. S. (1961). **Bloat in cattle. II. Its development on alfalfa pasture after inoculation of empty rumina with autoclaved or fresh rumen fluid.**—J. Dairy Sci. 44, 553-555. 3328

In 3 sets of fistulated identical twin dry cows whose rumens had been emptied and washed clean, freshly collected untreated rumen fluid from 2 control cows exhibiting frothy bloat was introduced into the rumen of one twin and autoclaved rumen fluid into the rumen of the other prior to being pastured on lucerne pasture. The maximum ability to froth developed by the second day in the untreated but not until in the fourth day in those receiving autoclaved rumen fluid. During the first day, there was reduced cellulolytic activity and a higher aerobic bacterial count in the rumen fluid from the twins which had received autoclaved fluid. Results indicate that cows deprived of practically all their rumen microflora can consume normal quantities of lucerne pasture by the third day and can develop bloat by the fourth, that microflora are involved in

bloat and that bloat is not the result of simple physiological breakdown of feed.

—A. ACKROYD.

Eckell, O. A., Gallo, G. G., Martin, A. A. & Portela, R. A. (1960). Observaciones sobre el "enteque seco" de los bovinos. [**Observations on 'enteque seco', a wasting disease of cattle.**]—Rev. Fac. Cienc. vet. La Plata 2, 193-211. [Summaries in English and French.] 3329

An account of observations on the disease, also known as "Manchester (Jamaica) wasting disease", in Argentina. [See also V.B. 25, 159; 26, 3889; 27, 1178.]—T.E.G.R.

Cornelius, C. E. & Moulton, J. E. (1960). **Ruminant urolithiasis. 2. Histochemical studies in experimental ovine calculosis.**—J. Urol. 84, 223-227. [For Part I see V.B. 30, 1154.] 3330

There was an increase in material staining by the periodic acid-Schiff (PAS) method within cells of proximal and distal convoluted tubules, on the brush borders of proximal tubules, and within cells of collecting tubules; also in casts within the lumina of collecting tubules and the transitional epithelial cells of the renal pelvis and bladder. This material also took up toluidin blue and stained light green with alcian blue. Crushed calculi from the bladder stained similarly. The authors suggested that complexes of carbohydrate and protein, important for the formation of calculus matrix, may originate from sources other than transitional epithelium.—R.M.

Carda Aparici, P. & Barros Santos, C. (1960). Hidrolizados de pescados en la nutrición de polluelos. [**Fish solubles in chicken nutrition.**]—An. Inst. Invest. vet., Madrid 10, 11-26. [Summaries in English, French and German.] 3331

It was concluded from feeding trials in chicks that replacement of fish meal by fish solubles in the ration for the first 9 weeks of life decreases weight gain and increases cannibalism.—M.G.G.

Annisson, E. F. & White, R. R. (1961). **Glucose utilization in sheep.**—Biochem. J. 80, 162-169. [Authors' summary modified.] 3332

Rates of utilization of glucose in fed and in starved sheep were determined by isotope dilution with a constant-infusion method. The general procedure was similar to that described for measurement of acetate utiliza-

tion in sheep (Annison & Lindsay, 1961). Estimates of glucose-pool size and glucose 'space' (the volume of distribution of the glucose pool) were also obtained.

Romboli, B., Del Bono, G. & Marrenghi, O. (1960). Contributo alla conoscenza della disemia iperlipidica del bovino. [**Hyperlipaemia in cattle.**] — Ann. Fac. Med. vet. Pisa 13, 79-106. [Summaries in English and French.] 3333

The condition was observed in apparently normal calves after slaughter. The blood was pale, milky in appearance and oily. The liver was fatty. Microscopic lesions, described in detail, were present in liver, spleen, kidneys, myocardium, skeletal muscles, lymph nodes, blood vessels, thyroid and pancreas. There was a marked increase in the total blood fat and its fractions. The pathogenesis and meat inspection aspect of the disease are discussed. —T.E.G.R.

Thafvelin, B. (1960). **Role of cereal fat in the production of nutritional disease in pigs.** — Nature, Lond. 188, 1169-1172. 3334

In Sweden nutritional diseases such as dietetic liver necrosis and muscular dystrophy occur frequently in pigs even when fed an all cereal diet. The possibility of the unsaturated fatty acids in the cereal playing a part in the production of these conditions was investigated. Grain containing oil which had gone rancid during storage and rancid maize oil were shown to be capable of producing the diseases concerned.—E. J. CASTLE.

Wilder, O. H. M., Ostby, P. C. & Gregory, B. R. (1960). **Effect of feeding butylated hydroxyanisole to dogs.** — J. agric. Food Chem. 8, 504-506. 3335

Three groups each of 4 young dogs were fed butylated hydroxyanisole (an antioxidant used in lard) at 5, 50, or 250 mg./kg. body wt. daily for 15 months. Health, weight gain, blood picture and haemoglobin content remained normal. The antioxidant or its metabolic products were detected in the urine. At P.M. examination liver injury was found in the dogs that had received 250 mg./kg., and one had bile pigments in the urine. It was concluded that dogs can ingest without harm at least 220 times the maximum permissible level of this antioxidant in lard for a long period.—M.G.G.

Dreizen, S., Dreizen, J. G. & Stone, R. E. (1961). **Nutritionally induced smooth muscle**

**lesions in the rat.** — J. Nutr. 74, 75-83. [Authors' summary modified.] 3336

Smooth muscle degeneration and necrosis in the aortic media and in the thick muscular wall of the stomach were found in a high proportion of young albino male rats restricted to a diet of fat-free dry cow's milk and tap water beginning at 6 weeks of age. The disseminated muscular necrosis was accompanied by severe anaemia and renal disease. Addition of vitamin A and 1.5% of ammonium chloride to the diet increased the incidence of smooth muscle lesions presumably by increasing the life span of the animals so treated.

The absence of smooth muscle lesions in rats reared on whole cow's milk fortified with trace minerals suggests that unidentified nutrients in butter fat and/or specific trace minerals are essential for maintenance of integrity of smooth muscle in the rat.

I. Lecce, J. G., Matrone, G. & Morgan, D. O. (1961). **Porcine neonatal nutrition: absorption of unaltered nonporcine proteins and polyvinylpyrrolidone from the gut of piglets and the subsequent effect on the maturation of the serum protein profile.**—J. Nutr. 73, 158-166. 3337

II. Lecce, J. G. & Matrone, G. (1961). **Porcine neonatal nutrition: effect of weaning time on the maturation of the serum protein profile.** —Ibid. 167-171. [Authors' summaries modified.] 3338

I. Using agar and immuno-electrophoresis, it was demonstrated that the absorption of proteins in the first 36 hours of a piglet's life is non-selective. Proteins from chickens and cows as well as different kinds of proteins (albumins and globulins) were absorbed. A synthetic, high-molecular-weight, blood plasma extender (polyvinylpyrrolidone) was also absorbed. Piglets fed cow's colostrum had an uninterrupted maturation of the serum protein profile and superior weight gain and viability. Piglets fed hens' eggs in cow's milk initially had similar serum protein changes, resulting from the absorption of egg proteins, but this was followed by a delayed maturation of the serum protein profile, inferior weight gain, and poor viability. Their performance was no better than that of control piglets fed cow's milk.

II. Pigs were weaned at one, 4, 8 and 14 days to fortified cow's milk or to amino-acid milk. In those weaned to cow's milk at one day the maturation of the serum protein

profile was delayed, even though its development had already begun. Their response in serum protein development resembled the latent response of pigs weaned at birth to cow's milk. Pigs weaned at one day to amino-acid milk showed an arrested immature serum protein profile and died. In pigs weaned to cow's milk at 4 days no delay in the development of serum proteins was seen. Pigs weaned at 4 days to amino-acid milk also developed a mature serum profile, although albumin did not reach as high a level as in the pigs fed cow's milk. Similar results were obtained in pigs weaned at 8 days to cow's milk or amino-acid milk. Pigs weaned at 14 days with a mature serum protein profile maintained the profile whether fed cow's milk or amino-acid milk.

Casady, R. B., Damon, R. A. & Suitor, A. E. (1961). **Effect of supplementary lysine and methionine on enteritis mortality, growth and feed efficiency in young rabbits.**—*J. Nutr.* 74, 120-124. [Authors' summary modified.] 3339

Supplementation of a basic rabbit ration with lysine and methionine gave conflicting results as regards the incidence of enteritis, but significantly increased weaning weights of the young. No effects on feed conversion were noted.

Bömer, H. (1961). Untersuchungen und Gedanken zum Problem der Weidetetanie. Topochemische Calciumbestimmungen im Skelett- und Herzmuskel von gesunden und an Weidetetanie erkrankten Schafen und Kühen. [**Grass tetany. Calcium content of skeletal and heart muscle in sheep and cows.**]—*Tierärztl. Umsch.* 16, 121-123. 3340

In healthy sheep and cows, no local concentrations of calcium were detected in the skeletal and cardiac muscle. But in animals with grass tetany calcium was deposited in and around the cell walls of both skeletal and cardiac muscle, and numerous intracellular calcium deposits were seen.—M.G.G.

Hurwitz, S. & Griminger, P. (1961). **The response of plasma alkaline phosphatase, parathyroids and blood and bone minerals to calcium intake in the fowl.**—*J. Nutr.* 73, 177-185. [Authors' summary modified.] 3341

Enlarged parathyroids, raised alkaline phosphatase content of the plasma and loss of bone material were found in calcium-deficient hens irrespective of supplementation with phosphorus, suggesting that dietary P has no influence on Ca depletion in laying hens.

The results indicated that decalcification rather than calcification of bone is associated with increased alkaline phosphatase levels. A relationship between the weight of the parathyroid glands and the alkaline phosphatase content of the plasma suggested that plasma alkaline phosphatase is indicative of parathyroid activity. Both in laying hens and in chicks the plasma alkaline phosphatase decreased as the dietary Ca increased, reaching a minimum in the range of the probable Ca requirement. The possible use of plasma alkaline phosphatase activity for the determination of Ca adequacy is proposed. In hens, both bone ash and bone organic matter appeared to decrease with Ca depletion. Little change was observed in the bone Ca : P ratio; but in chicks, a smaller ratio was obtained at low levels of dietary Ca.

Bendixen, H. C. (1961). Kobaltmangelkrankheit der Wiederkäuer—Erfahrungen in Dänemark. [**Cobalt deficiency in ruminants—experiences in Denmark.**]—*Dtsch. tierärztl. Wschr.* 68, 221-223. [Summary in English.] 3342

Cobalt deficiency is present in several areas in Denmark which were melting zones in the last ice age. The condition was common during the war but is now rarely seen in animals since these are fed imported concentrates with a high cobalt content.—M.G.G.

Spais, A., Palsson, P. A. & von Bogaert, L. (1961). **Pathology of enzootic ataxia of lambs.**—*Acta neuropath.* 1, 56-72. [Summary in German. Authors' summary modified.] 3343

The authors found no lesions in muscles, nerves, anterior horns and spinal cord tracts of 35 lambs with swayback. Before attributing pathological significance to alterations found in new-born animals, it is necessary to study strictly-selected controls, and three controls were examined.

Neuronal lesions in the brain stem and the cerebellum are sometimes found but are neither constant nor marked. Spongy transformation of the white matter, extending sometimes to the neighbouring cortex and exceptionally affecting the central grey matter, is the basis of diagnosis. It can be followed at all stages. Because of the existence, normally, of a gliosis of myelination in the same regions where the spongy transformation commences, it can be difficult to detect at very early stages. The first undoubted signs of an axial affection are venous stasis, oedematous

swelling of the glia and of the first spongy bullae or the first fissures in the ground substance.

The lesions suggest a metabolic disorder of the nervous parenchyma, beginning in those areas where myelination commences. It takes the form of a spongy imbibition followed by fissuring and cavitation. This imbibition is associated with functional vascular disorders. The necrosis resolves as do the more familiar types of necrosis. There is little if any evidence of gliofibrillar organization. There are no signs of mesenchymal organization (this may be due to the youth of the animals).

The disease cannot be compared with demyelinating disease nor the leucodystrophies described in man. Congenital hypomyelogenesis and "B" disease are not the same as enzootic ataxia of lambs.

McCall, J. T. & Davis, G. K. (1961). **Effect of dietary protein and zinc on the absorption and liver deposition of radioactive and total copper.** — *J. Nutr.* 74, 45-50. [Abst. from authors' summary.] 3344

Accumulation of copper in the livers of rats fed high levels of copper phosphate (1,000 or 2,500 p.p.m.) was influenced by zinc and protein. The interrelationship between copper and the other dietary factors was a complex interaction, dependent upon the relative concentration of all the factors present.

Observations on the accumulation of orally administered copper<sup>64</sup> in the liver were inconclusive but they indicated that when absorption increased there was not necessarily increased availability of the element to an animal; decreased liver storage of Cu did not necessarily indicate a decrease in liver metabolism of the element.

Neundorff, R., Rauch, H. & Bernhardt, W. (1961). Untersuchungen über die Anämie der Ferkel. 1. Mitteilung. Hämatologische Untersuchungen und Möglichkeiten der parenteralen Eisenprophylaxe zu verschiedener Jahreszeit. [Research on anaemia in piglets. I. Haematology and prophylaxis by parenteral administration of iron at different seasons.] — *Mh. VetMed.* 16, 241-248. 3345

Piglets born in winter were injected i/m with 150 mg. Fe in 2 ml. of iron-dextran complex within the first 3 days of life. The haemoglobin content of their blood was much more stable than that in control piglets, and at 56 days they weighed 17% more than controls. In a similar trial in May, when the piglets were allowed access to soil from the 4th-6th

day of life, the differences were less, but anaemia developed in untreated piglets, and treated piglets weighed 6.4% more at 56 days. In trials from June to December with preparations containing iron, trace elements and vitamins, there was no or very little difference between treated and untreated piglets.

—M.G.G.

Anon. (1961). Kopziektenenquête in 1958/59 in het gedeelte van het amtsgebied Noord-holland-Zuid, gelegen ten Noorden van het Noordzeekanaal. [**Hypomagnesaemia enquiry in North Holland.**] — *Tijdschr. Diergeneesk.* 86, 648-654. [In Dutch.] 3346

Four hundred and sixty-nine farms where hypomagnesaemia had occurred were investigated by the Alkmaar provincial health service for animals (director: D. Rempt) and data for three years were accumulated. Half the 570 affected cattle were aged 4-6 years and 58% had calved three or more times. The 50 fatal cases were distributed equally among each age group. There appeared to be hereditary predisposition to the condition. Errors in the application of potassium-containing fertilizers were noted on some farms.—R.M.

Ross, D. B. (1961). **Influence of sodium on the transport of magnesium across the intestinal wall of the rat in vitro.** — *Nature, Lond.* 189, 840-841. 3347

When Krebs' bicarbonate saline soln. containing 0.5% glucose was circulated through the lumen of rat small intestine *in vitro*, the amount of Mg transported through the wall increased as the concentration of NaCl in the saline soln. was raised. As neither ammonium chloride nor potassium chloride influenced the transport of Mg, it appears that the influence of NaCl is due to the sodium rather than to the chloride ion.

—M.G.G.

Partington, H. & Sellwood, E. H. B. (1961). **The manganese content of the diet of the budgerigar.** — *J. Small. Anim. Pract.* 1, 281-285. [Summary in French.] 3348

The authors were unable to support the theory that "French moult" was caused by manganese deficiency.—R.M.

Muth, O. H., Schubert, J. R. & Oldfield, J. E. (1961). **White muscle disease (myopathy) in lambs and calves. VII. Etiology and prophylaxis.** — *Amer. J. vet. Res.* 22, 466-469. 3349

In trials with 7 lots of 12 pregnant ewes

fed a basal myopathogenic ration of 4 lb. of Ladino clover and 0.25 lb. of oats/ewe/day, the following treatments all gave some degree of protection against white muscle disease in the lambs: (1) Selenium as  $\text{Na}_2\text{SeO}_3$  subcutaneously to the lambs to give 0.2 p.p.m. of the assumed dry matter intake during the first 6 weeks; (2) vitamin E, 1,000 i.u. to the lambs on the first and second days of life; (3) 0.1 p.p.m. Se as  $\text{Na}_2\text{SeO}_3$  calculated on a dry matter basis added to the oats given to the ewes; (4) 0.1 p.p.m. Se plus  $\text{Na}_2\text{SO}_4$  to supply a total of 0.216% of sulphur of the entire ration of the ewes; (5) soya bean cake substituted for oats to the ewes; and (6) linseed cake substituted for the oats. Se in the ration to the ewes gave the most protection and weight gains in the lambs. There was evidence that when  $\text{Na}_2\text{SO}_4$  was also given, the sulphur interfered with the action of Se. Analysis of 29 samples of legumes and mixed forage from 16 affected ranches revealed adequate Se values ranging from 0.06–1.30 p.p.m. White muscle disease in Oregon appears to result from substances, possibly including sulphur, causing aberrant metabolism of the selenium present in the feeds.

—A. ACKROYD.

Lagacé, A. (1961). **Effect of selenium on white muscle disease in lambs.**—J. Amer. vet. med. Ass. 138, 188-190. [Abst. from author's summary.] 3350

Sodium selenate, injected s/c, was used in the control of white muscle disease in a flock of 175 lambs. The first clinical signs were observed in 15 of 120 lambs when they were about 8 weeks old, 2 days after they had been turned out on pasture. Each lamb was given 1 mg. of sodium selenate s/c and, in addition,  $\alpha$ -tocopherol was injected into the most seriously affected lambs. Five lambs died but the disease was halted in the remainder of the flock.

Thirty-one of the remaining 55 lambs that were not yet on pasture, including 2 with stiffness, were treated with selenium, and the rest were used as controls. There was a rapid drop in glutamic oxaloacetic transaminase (SGOT) in the serum of treated lambs, and no clinical disease occurred. In the control group, there were 2 deaths out of 5 lambs with clinical signs of the disease. Several had relatively high SGOT which indicated subclinical white muscle disease.

O'Dell, B. L., Hardwick, B. C. & Reynolds, G. (1961). **Mineral deficiencies of milk and**

**congenital malformations in the rat.**—J. Nutr. 73, 151-157. [Authors' summary modified.] 3351

Female rats were maintained from weaning on 4 different dried-whole-milk diets. The control diet was supplemented with vitamins and iron, manganese, copper and iodine. Diets low in these elements were also prepared.

Iron deficiency caused a mild anaemia in the adult rats. Their offspring were severely anaemic, weak, and nearly all died, but they were not grossly malformed.

Mild manganese deficiency did not seriously impair reproduction but it did produce skeletal anomalies. The long bones were shorter than normal, there were extra sternebrae in the sternum and fusion of the sternal and vertebral segments was common.

The copper-deficient diet did not cause anaemia in adult rats but their offspring were severely anaemic and nearly all died. The deficient new-born had severe oedema, widespread subcutaneous haemorrhage and abdominal hernias.

Orstadius, K. (1961). **Nutritional muscular dystrophy in pigs. Studies on the aetiology, diagnosis and therapy.**—Thesis, Stockholm pp. 28. [In English.] [Uppsala: Almqvist & Wiksells Boktryckeri AB] 3352

This thesis summarizes work reported between 1959–1961 in seven separate papers, in collaboration with N. Lannek, P. Lindberg and others at the Royal Veterinary College of Sweden.—R.M.

Hart, P. C. (1961). **Fysisch-chemische kenmerken van spierdegeneratie bij varkens. [Physico-chemical characteristics of muscle degeneration in pigs.]**—Tijdschr. Diergeneesk. 86, 663-669. [In Dutch. Summaries in English, French and German.] 3353

Degenerated longissimus dorsi and gracilis muscles had higher contents of free water, carbohydrates and lactic acid, lower myoglobin content and lower pH, and the colour value of meat extract was reduced in comparison with normal muscle. There were no changes in sodium and potassium concentrations in affected muscle.—R.M.

Matveev, V. A., Lenets, I. A., Ivanov, G. V. & Baldaev, S. N. (1959). **[Alimentary osteodystrophy in sheep.]**—Trudy Buryat. zoovet. Inst. 14 (Vet.), 205-220. [In Russian.] 3354

Spontaneous fractures of humerus and femur occurred in 46 of 500 two-year-old

castrated sheep during one summer on a collective farm in the Buryat Republic. Thirty-five of the affected sheep were subjected to haematological, clinical, pathological, biochemical and radiographical examinations. The ratio of calcium to phosphorus in bone averaged 4.3:1 compared with 3.5:1 in ten healthy sheep. Blood composition of affected and healthy sheep (in mg. per 100 ml. of serum) averaged: Ca 10.8 and 11.6; inorganic phosphorus 5.0 and 5.3, Mg 1.2 and 0.9; K 20.7 and 20.4, respectively. Nutritional aspects of the disease were discussed, but the mineral content of the diet was not given.—R.M.

Lever, J. D., Jeacock, M. K. & Young, F. G. (1961). **The production and cure of metahypophyseal diabetes in the cat: a biochemical and electron-microscopical study with particular reference to the changes in the islets of Langerhans of the pancreas.**—Proc. roy. Soc. Ser. B. 154, 139-150. 3355

Diabetes was produced by daily s/c inj. of ox anterior pituitary extract or purified ox pituitary growth hormone. It responded to oral administration of tolbutamide. Changes in the cytology of beta-cells were described and there are 7 plates of photomicrographs.

—R.M.

Boldizsár, H., Kemény, A., Gáspár, N. Z. & Stützel, M. (1961). **Tanulmányok a pajzsmirigy működésére vonatkozóan J<sup>131</sup>-gyel. IV. A takarmány jód- és szójatartalmanak hatása a pajzsmirigy J<sup>131</sup>-felvételére különböző korú csirkékben. [Thyroid function studies with radio-iodine. IV. Effect of iodine and soya flour in the diet on iodine uptake in chicks and fowls.]—Mag. állator. Lapja 16, 135-138. [Summaries in English and Russian.] 3356**

The I<sup>131</sup> uptake of the thyroid gland was studied in 86 Leghorn, New Hampshire and White Hungarian chicks (day-old, 4 weeks and 9-10 weeks old) in four groups under various conditions of iodine supply. The effect of the feeding of soya meal, which is known to be goitrogenic, on the I<sup>131</sup> uptake of the thyroid gland and on the oxygen consumption of the birds was also studied. It was found that the amount of I<sup>131</sup> absorbed by the thyroid

was low in birds which received a regular iodine supply in their food; nor was it influenced by feeding soya meal. In birds however, which did not receive an iodine supplement in their food, the uptake of I<sup>131</sup> of the thyroid was higher, and it increased even further when soya meal was fed. Oxygen consumption of birds which received soya meal was significantly lower than that of those which did not. It was assumed that soya meal has an inhibitory action on the hormone secretion of the thyroid as a result of which the oxygen consumption of the body decreases. This in turn increases production of Thyroid Stimulating Hormone, resulting in increased uptake of iodine by the thyroid. The well known fattening action of soya meal is therefore basically a depressing action on the oxygen consumption of the body.

—A. SEBESTENY.

Kronfeld, D. S. (1961). **Metabolic aspects of ruminant ketosis.**—Amer. J. vet. Res. 22, 496-501. 3357

Experiments over the past 2-3 years to test theories on ruminant ketosis are reviewed. Enhanced ketogenesis or impaired ketolysis are both favoured by an inadequacy of acetyl-Coenzyme A metabolism *via* the citric acid cycle or fatty acid helix or both. Most observations on ketotic sheep are consistent with impaired citric acid cycle activity being due to a shortage of cyclic intermediates particularly oxalacetate. But in cows with ketosis, any impairment of citric acid cycle activity appears more likely to be due to a shortage of enzymic cofactors and to be less important, at least in acetate metabolism, than impaired lipogenesis.—A. ACKROYD.

Blackburn, P. S., Castle, M. E., Drysdale, A. D. & Strachan, N. H. (1961). **The effect of feeding a high or a low mineral concentrate on the incidence of ketosis in dairy cows.**—Brit. vet. J. 117, 158-166. 3358

Of 17 cows in a herd with a history of ketosis, 9 were fed a concentrate with a high mineral content and 8 one with a low mineral content for 3½ months starting in the 6th week before calving. Although strongly positive reactions to Rothera's test were twice as frequent in the group fed insufficient minerals, there was no great difference in the incidence of clinical ketosis.—M.G.G.

## DISEASES, GENERAL

Leech, F. B. (1961). **Food losses through animal disease.** — Proc. Nutr. Soc. 20, 20-24. 3359

In the United Kingdom, large scale surveys have indicated that 30% of the calf mortality is due to *Escherichia coli* infections, 2% of dairy cows die on the farm or are slaughtered at the knackery and 7% of breeding ewes die in a year, 2% of pregnant cattle abort, reducing the national milk supply by about 0.5%, and mastitis reduces the milk yield of a cow by 5-10% [See also *V.B.* 27, 561; 30, 825; 31, 509 & 1574.]—M.G.G.

Beloutic, M. (1961). Une affection récente des juments en Yougoslavie. [**An unusual disease of mares in Yugoslavia.**]—Bull. Soc. vét. Prat. 45, 140-141. 3360

An account of a disease somewhat similar to milk fever in cows or eclampsia in sows and bitches. In four mares there was decubitus, pale conjunctivae, distension of the abdomen and constipation. Temperature was about 38°C., respiration rate between 5 and 10, and pulse 42-52. In three mares the limbs were extended and in the fourth there was muscular relaxation with cold extremities. One was in advanced pregnancy; one had aborted 6 days and another 3 months previously. An animal treated with morphine and another with cardiac stimulants died. Treatment, with calcium (i/v) and cardiac stimulants, was followed by recovery in one and, in another, by improvement and death when treatment with calcium, adrenaline and enemata, was discontinued. In similar cases, there was improvement after treatment with vitamins and cardiac stimulants.—T.E.G.R.

Hill, J. K. & Herrick, J. B. (1961). **Necrotic glossitis in feedlot steers.** — Vet. Med. 56, 190-191. 3361

Necrosis of the tip of the tongue, accompanied by profuse salivation and drooling, was observed in steers in 4 feedlots. Foot rot was also present. Cases continued to appear after the removal of pigs from 2 feedlots, some of which were tail biters. A streptococcus and *Escherichia coli* were isolated from the tongue lesions. Morbidity approached 100%. Treatment was not attempted, and no animal died. Heifers were not affected.—M.G.G.

Hiepe, T. (1961). Erfahrungsbericht über die Durchführung des Schafherdengesundheitsdienstes und die dabei beobachteten Herdenkrankheiten. [**Experiences of the sheep health**

**service in East Germany.**] — Mh. VetMed. 16, 283-288. 3362

An account of the disease and management problems in 117 flocks of 40,000 sheep attached to the Leipzig sheep health service. A table lists the incidence of 35 diseases and parasitic infestations from 1955 to 1960. [See also *V.B.* 31, 2256.]—M.G.G.

Clausen, H. & Thomsen, R. N. (1961). 49. beretning om sammenlignende forsøg med svin fra statsanerkendte avlscentre 1959-60. [**49th report on comparative trials with pigs at state-recognized centres in Denmark.**] — Beretn. Forsøgslab. Kbh. No. 327 pp. 128. [In Danish. Summary in English. pp. 58-65.] 3363

Between September 1959 and September 1960, progeny tests were done on 3,920 Landrace pigs. During the year 2.5% were discarded from the trials on account of illness, death or unthriftness. There were 9 cases of tuberculosis; other causes of loss are mentioned on pages 84, 106 and 126, at the end of tables showing details of three testing centres.—R.M.

Roe, C. K. & Alexander, T. J. L. (1961). **Attempts at establishing swine herds free from atrophic rhinitis and virus pneumonia. 1. Review of initial work at the Ontario Veterinary College.** — Canad. vet. J. 2, 139-142. [Authors' summary modified.] 3364

A brief review of work at the Ontario Veterinary College in association with the Ontario Certified Herd Policy for Swine. P.M. examinations of heads and lungs from herds which have applied for certification indicate how widespread these two diseases are in Ontario. Two schemes for eradicating these diseases from affected herds have been on trial. The first, based on the isolated farrowing of sows and the slaughter testing of their offspring, appears to be effective in eradicating virus pneumonia but has failed with atrophic rhinitis. The second scheme, based upon the artificial rearing of pigs obtained by caesarian section, is still in its early stages but it offers hopes of success.

Thoonen, J. & Hoorens, J. (1961). Maagulcera in de pars oesophagea bij varkens. [**Ulceration of the oesophageal part of the stomach in pigs.**]—Vlaams diegeneesk. Tijdschr. 30, 79-92. [In Flemish. Summaries in English, French and German.] 3365

During meat inspection of 600 pigs over

a period of two years, 29 were found to have ulcers of the gastric cardia. Morphological and histological features were described and there are nine photographs. Affected pigs were in poor health, and some died from haemorrhage. In ten cases fungi were demonstrated histologically in ulcers, but the cause of the ulcers was not known.—R.M.

Ludvigsen, J. (1961). Om den praeventive ACTH behandlings virkning ved "farefeber" med dysgalakti hos søer. (Foreløbig meddelelse). [Preventive activity of corticotrophin in "shipping fever" with dysgalactia in sows.] — Medlemsbl. danske Dyrægeforen. 44, 268-273. [In Danish.] 3366

L. reported trials in four herds, of routine prophylactic treatment of sows with corticotrophin before parturition (from the 110th day after service). The material comprised 124 parturitions with observations on the sows and their piglets. At the time the incidence of the syndrome referred to as "shipping fever" (rise of temperature, metritis, dysgalactia and mastitis) was very high, with a high incidence of illness in new-born piglets ("arthritis" and diarrhoea in the first weeks of life and at 3-6 weeks an increasing incidence of rhinitis and respiratory affections). Two preparations of ACTH were used, one containing vitamin E; dosage of ACTH was 30 or 60-100 units, injected i/m.

In the treated sows duration of farrowing was shortened by 25-28% and the number of stillborn piglets reduced. Though metritis still occurred, with increased discharge of mucopurulent secretion, the general condition of the sow appeared unaffected and there was usually no fever. Incidence of dysgalactia and of mastitis was reduced. In the piglets there was less "arthritis", less fighting and biting; incidence of diarrhoea was greatly reduced; average weight at weaning was higher in all the treated herds and at 3 weeks it was higher in two but slightly lower in the other two which had the lowest number of stillborn piglets. After weaning the incidence of rhinitis and of respiratory affections was strikingly reduced as compared with untreated herds.—F.E.W.

Pobisch, A. (1961). Beitrag zur Ätiologie der "Zitterkrankheit" (Tremor) des Schweines. [Aetiology of trembling in pigs.] — Wien. tierärztl. Mschr. 48, 162-179. [Summaries in English, French and Italian.] 3367

An account of 5 outbreaks of trembling in piglets and nervous symptoms in growing

and adult pigs. Poor management and feeding were excluded as causal factors. A hereditary factor was considered to be the likely cause of trembling in piglets.—M.G.G.

Sabec, D., Schilling, E. & Schulz, L. C. (1961). Eine Arthrosis deformans des Sprunggelenkes beim Schwein. [Arthrosis deformans of the hock joint in pigs.] — Dtsch. tierärztl. Wschr. 68, 231-236. [Summary in English.] 3368

This paper is based on material of a dissertation published by the first author in 1960 [see *V.B.* 31, 221].—M.G.G.

Geurden, L. M. G. & Devos, A. (1961). Onderzoek over sterfte bij nertsen tijdens de periode 1956-60. [Losses among mink in Belgium.] — Med. Veeartsenijsschool Ghent 4, No. 4 pp. 27. [In Flemish. Summaries in English, French and German.] 3369

Between 1956 and 1960 the authors examined post-mortem 148 mink. Common causes of death were dietary errors (23 cases), pneumonia (24), tuberculosis (19), gastroenteritis (18), bite wounds (9), distemper (9), anthrax (8). In Belgium, mink are immunized against botulism and distemper. Four different pathogenic strains of *E. coli* were isolated from cases of gastro-enteritis.—R.M.

Ayfantis, S., Papadopoulos, A. & Christodoulou, A. (1961). [Survey of diseases of fowls in Greece, 1955-1960.] — Delt. Hellen. kten. Hetair. No. 41 pp. 3-20. [In Greek. Summary in French.] 3370

Diseases observed were: *Candida* infection in adult fowls, mild infectious bronchitis and infectious encephalomyelitis (virus not isolated) in chicks. There was complete absence of pullorum disease but a marked increase in fowl typhoid and paratyphoid. Avian leucosis and chronic respiratory disease are increasing.—T.E.G.R.

Maas, H. J. L. & Voûte, E. J. (1961). Een praktijkonderzoek over de blauwe kam ziekte bij hoenders in "het land van Weert". [Blue comb disease of fowls in a district of Limburg province, Belgium.] — Vlaams diergeneesk. Tijdschr. 30, 106-121. [In Flemish. Summaries in English and French.] 3371

In the district there were 1.5 million fowls (including 800,000 pullets) on about 3,000 poultry farms. Bluecomb disease was reported from 215 farms of which 56 were investigated. Laboratory examination confirmed suspected bluecomb disease in only 33 of 56 birds submitted. It was estimated that 3-4% of pullets which died were affected with the

disease. Aetiology was discussed. Administration of oxytetracycline in the drinking water was 4-5 days (equivalent to about 55 mg. a bird daily) and restriction of diet appeared to control outbreaks.—R.M.

Häggroth, S. & Höglund, G. (1961). **Determination of  $^{90}\text{Sr}$  and stable strontium in bones from sheep ewes and their fetuses.**—Exp. Cell Res. 24, 80-87. [Part of authors' introduction.] 3372

The authors measured the concentrations of  $^{90}\text{Sr}$  and stable strontium incorporated into the skeletons of Swedish sheep. The determinations were performed on ossified bone from their fetuses in order to determine the strontium concentrations in fetuses of varying weight.

Turner, R. C., Radley, J. M. & Mayneord, W. V. (1961). **Naturally occurring alpha-activity of drinking waters.**—Nature, Lond. 189, 348-352. 3373

A continuation of a series of papers describing the nature and levels of naturally occurring alpha activity in the environment of man, and its translation from that environment to man. Analyses of some 70 samples are tabulated, and classified in five groups in order of activity, spa waters, Cornish waters, ground waters from non chalk strata, those from chalk strata, and surface waters, the last named showing least activity. The activity is shown to consist of three groups, namely, long lived isotopes, being almost entirely radium-226 and its decay products; radon-222 and its alpha-emitting daughters, which in many samples is shown to be present in great excess over that expected from equilibration with the parent radium-226 present; and thirdly a quantity, detected in the more active waters, of short lived members of the thorium series regarded as radium-224 and its daughters; no long lived members of the thorium series were detected. As with naturally occurring alpha emitters in food the levels present showed extreme range. Long lived activity, *i.e.*, radium-226 expressed as parent micro-micro-curies per litre varied from 0.005-12.1; excluding spa waters the highest level was 2.4. Mean daily intakes of this long lived isotope are estimated as being from 1.1 micro-micro-curies in Cornwall to 0.06 in Scotland; the extreme range for individuals in various parts of the country is thought to exceed 10,000 fold. Much higher activities of radon are found but as the residence time of this element in the body is

only about one hour these levels have an entirely different significance; this is discussed. The implications of the findings in the light of the international recommendations for intake of such activity are also discussed, and a comparison made with beta and gamma activity in drinking water due to fallout.—M. K. LLOYD.

Monroe, R. A., Wasserman, R. H. & Comar, C. L. (1961). **Comparative behavior of strontium-calcium and cesium-potassium in the fowl.**—Amer. J. Physiol. 200, 535-538. 3374

In cockerels fed  $\text{Ca}^{45}$  and  $\text{Sr}^{85}$  and a ration containing varying amounts of calcium, the proportion of  $\text{Ca}^{45}$  absorbed was greater than that of  $\text{Sr}^{85}$ , the strontium-calcium discrimination ratio being 0.6 in bone and 0.8 in blood plasma. In laying hens the strontium-calcium discrimination ratio was 0.5-0.6 in bone, egg shell and egg yolk, but about 1.5 in egg white and blood plasma. The ratio of caesium to potassium in chicks dosed with both isotopes varied in different parts of the body, the lowest ratios being in brain and blood, and the highest in kidney.—M.G.G.

Anon. (1960). **The hazards to man of nuclear and allied radiations. A second report to the Medical Research Council.** pp. vii + 154. London: H.M. Stat. Off. 7s. 0d. 3375

Since the first report in 1956 there has been intense activity in this field, and much of this second report and its recommendations are based on this newer knowledge. Of the 150 pages, 100 are devoted to appendices by various experts describing much of the recent findings in some detail, and provide a useful source of references. In particular the report contains much information on leukaemia in relation to radiation, genetic effects, existing and foreseeable levels of exposure to radiation, an account of naturally occurring alpha activity, and a well documented account of the environmental aspects of the Windscale accident. Three reports by the Committee on Protection against Ionising Radiation are included; these deal with permissible levels of dietary contamination after nuclear accidents, emergency exposure, and comments on the I.C.R.P. recommendations. A small amount of information of more specific interest to veterinarians deals with the occupational hazard arising from the use of X-ray machines, and also with the translation *via* grazing animals of fission products from fallout and other sources to human diet.

—M. K. LLOYD.

Meijer, W. C. P. & van der Eijk, W. (1961). Vitiligo bij een zwartbonte F.H. stamboekvaars. [**Vitiligo in a Friesian heifer.**] — Tijdschr. Diergeneesk. **86**, 537-541. [In Dutch. Summaries in English and German.] **3376**

A calf was born in the Netherlands with white flecks measuring 4-6 cm. across, scattered all over the body, due to lack of pigment in the affected areas of skin. It was killed because of emaciation from liver abscess. Although its pedigree was known, no other cases could be traced.—R.M.

See also absts. **3452** (book, principles of veterinary pathology); **3453** (African veterinary handbook); **3454** (book, scientific basis of medicine); **3457** (livestock health encyclopaedia).

## POISONS AND POISONING

Pattison, F. L. M. (1959). **Toxic aliphatic fluorine compounds**. pp. xi+227. Amsterdam (London, New York & Princeton): Elsevier Publishing Company. 18s. **3378**

This monograph is a summary of present knowledge of the toxicity of fluoroacetates, omega-fluorocarboxylic acids and other compounds of practical importance in poisonous plants of the *Dichapetalum* genus and as "Compound 1080" used for vermin control. The author is Professor and Head of the Department of Chemistry at the University of Western Ontario. He has been studying these fluorine compounds for nine years.—R.M.

Bell, M. C., Merriman, G. M. & Greenwood, D. A. (1961). **Distribution and excretion of F<sup>18</sup> fluoride in beef cattle.**—J. Nutr. **73**, 379-385. [Authors' summary modified.] **3379**

Blood, saliva, urine and faeces from two heifers and 12 cows given tracer levels of F<sup>18</sup> showed that the isotope was distributed and excreted rapidly. Half the dose remained in the blood after 2 min., but after 240 min. only 4% remained. The concentration of F<sup>18</sup> in protein-free filtrate of plasma was higher than in whole plasma or cells. At 240 min. after dosing there were high concentrations in lung, kidney, rumen wall, reticulum wall and in bone. Continued feeding of fluoride did not influence metabolism or excretion of F<sup>18</sup>. Stable fluoride varied with the levels of fluoride fed.

Musche, R. & Schöberl, A. (1961). Zum Problem von Molybdänvergiftungen bei weidenden Rindern. [**Molybdenum poisoning**

in grazing cattle.]—Dtsch. tierärztl. Wschr. **68**, 296-298. [Summary in English.] **3380**

Liver from cattle in which molybdenum poisoning was suspected and herbage from the pasture they had grazed were analysed. In herbage the Mo content was 19.2 p.p.m., as compared with normal values of 0.47-0.68 p.p.m. dry weight. In the liver Mo was apparently normal. The technique of colorimetric analysis was described and the literature discussed.—E.G.

Falpin, B. (1961). **Toxicity in fowl due to hardwood litter.**—Vet. Rec. **73**, 454-455. **3381**

In fowls on litter of sawdust and shavings from hardwood (mainly *Entandophragma cylindricum* and *Triplochiton scleroxylon*) there was thickening of the tissues under the scales of the legs and feet, simulating *Cnemidocoptes* infestation, followed by scurfiness and thickening of the skin; lesions occasionally occurred on the comb and wattles. General debility and marked loss of weight ensued. On removal from the litter the syndrome stopped but unthriftiness persisted. Nervous symptoms developed if the birds were left on the litter. P.M. findings included enlargement and hardening of the liver, excoriation of the proventricular mucosa, congestion of the kidneys, catarrhal sinusitis, caseous exudate in the conjunctival sac, and thickening and roughening of the air sac membranes. Microscopic findings are described. The syndrome is considered suggestive of hyperkeratosis as seen in cattle and of vitamin A deficiency.

—T.E.G.R.

Davis, G. K. & Roberts, H. F. (1959). **Urea toxicity in cattle.**—Bull. Fla agric. Exp. Sta. No. 611 pp. 16. [Authors' conclusions modified.] 3382

Urea was not toxic for cattle when fed as 1% of the total ration or 3% of the concentrate.

Cattle will develop a tolerance for urea when the daily intake is increased gradually.

Starvation for 24 to 48 hours appeared to decrease tolerance for urea.

Low protein diets may result in a lower tolerance for urea.

Adaptation to urea is lost rapidly. Animals which have been without urea for three days should be given only low levels until readapted to higher intakes.

Urea toxicity develops rapidly. The signs include uneasiness, muscle and skin tremors, salivation, laboured breathing, incoordination or ataxia, bloat, tetany and death. None of the animals in which blood ammonia values exceeded 4.0 mg per 100 ml. of blood survived.

Acetic acid as a 5% solution or as vinegar is effective in treatment if given before the development of severe tetany.

Underbjerg, G. K. L. (1961). **Ammonia in a urea feed sample.**—Vet. Med. 56, No. 1 pp. 5-6. 3383

A strong odour of ammonia was noticed in a sample of cattle food consisting of urea, whole ground soya beans and ground milo grain. The danger of causing ammonia poisoning by mixing urea and unheated ground soya beans was pointed out.—M.G.G.

Allcroft, R., Carnaghan, R. B. A., Sargeant, K. & O'Kelly, J. (1961). **A toxic factor in Brazilian groundnut meal.**—Vet. Rec. 73, 428-429. 3384

Heavy mortality has been reported in turkey poults and ducklings after feeding a diet containing Brazilian but not Indian groundnut meal. Characteristic histological lesions in the liver consisted of extensive proliferation of cords of cells radiating from the portal duct, somewhat like that seen in seneciosis in fowls. A toxic preparation was obtained by chloroform extraction, under either acidic or basic conditions, of a

dispersion in water of the material isolated from the meal by methanol extraction. The toxic factor is neither a pyrrolizidine alkaloid nor the N-oxide of such an alkaloid.

—A. ACKROYD.

Farrington, K. J. & Gallagher, C. H. (1960). **Complexes of copper with some pyrrolizidine alkaloids and with some of their esterifying acids.**—Aust. J. biol. Sci. 13, 600-603. [Abst. from authors' discussion.] 3385

The alkaloids of *Heliotropium europaeum* which contain an esterified acid with an  $\alpha$ -glycol group, and the free  $\alpha$ -hydroxy acids of these alkaloids, were found to form complexes with copper. In view of the abnormal accumulation of copper in the liver of sheep which have grazed *H. europaeum*, and the similar accumulation associated with the administration of pyrrolizidine alkaloids to rats, these complexes may be of biological interest.

Khan, M. A., Kramer, T. & Avery, R. J. (1961). **Organophosphate poisoning in cattle with particular reference to Co-Ral.**—Canad. vet. J. 2, 207-211. [Summary in French. Authors' summary modified.] 3386

Six deaths were reported in a herd of yearling cattle that had been sprayed with 0.5% Co-Ral wettable powder. P.M. examination of 3 revealed lesions suggestive of organophosphate poisoning. The animals were sprayed in cold weather when they were possibly under the stress of transport and changed environment and feed.

Ladell, W. S. S. (1961). **Physiological and clinical effects of organophosphorus compounds.**—Proc. R. Soc. Med. 54, 405-406. 3387

The physiological effects of acute anticholinesterase poisoning in the brain and neuro-muscular junctions are lethal as they lead to asphyxia, those in the autonomic nervous system are the source of most of the signs and symptoms. In sublethal poisoning both primary and secondary effects can be distinguished, the latter being associated with prolonged cerebral anoxia and degeneration of certain myelinated nerve fibres.—M.G.G.

See also absts. 3326 (effects of *Trigonella foenum-graecum* straw on cattle); 3446 (report, Australia).

## PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

- Pickering, D. E. & Kao, T. T-H. (1961). **Fluid and electrolyte therapy for monkeys.** — J. Amer. vet. med. Ass. **138**, 527-531. 3388

The authors maintained mulatta macaque monkeys in full health and with small weight loss over ten days on a fluid diet containing balanced electrolyte requirements with added calories in the form of ethyl alcohol and sucrose. Control groups from which all oral feeding was withheld for varying periods lost weight and developed unbalanced serum electrolyte concentrations. The authors claim that fluid feeding of the type described might be useful for monkeys in transit. It is to be noted, however, that under the conditions of the experiment the monkeys were maintained at nearly constant humidity and temperature and so were not exposed to normal conditions of travel.

The paper contains a useful table giving normal serum chemistry data for the monkeys used.—R. N. FIENNES.

- Kuttler, K. L., Marble, D. W. & Blincoe, C. (1961). **Serum and tissue residues following selenium injections in sheep.**—Amer. J. vet. Res. **22**, 422-428. 3389

Radioactive sodium selenite injected s/c into the shoulder or ear of adult ewes at the rate of 5 mg./100 lb. body wt. was absorbed and eliminated more rapidly than radioactive barium selenate inj. at 20 mg. or 50 mg./100 lb. Highest selenium serum levels after the sodium salt (10 µg./100 ml.) occurred 1 day after injection and had dropped to 4 µg./100 ml. by the 14th day. Serum and tissue selenium levels after barium selenate inj. into the shoulder were significantly higher than after injection into the ear. Selenium tissue residue levels 148 days after injections could be divided into 3 groups: low levels (up to 2.5 µg./100 g.) were found in bone, skin, skeletal muscle, fat, serum and bile; medium levels (2.6-5.79 µg./100 g.) in hoof, wool, liver, small intestine and whole blood; and high levels (above 5.8 µg./100 g.) in spleen, heart, lung, brain and kidney, kidney having the highest. Sodium selenite was lethal at 80 mg./100 lb. body wt. and toxic at 40 mg. although some animals appeared more susceptible than others. Barium selenate was not toxic even at the rate of 1,080 mg./100 lb.

—A. ACKROYD.

- Embrey, M. P. (1961). **Simultaneous intramuscular injection of oxytocin and ergometrine: a tocographic study.** — Brit. med. J. June 17th, 1737-1738. [Author's summary modified.] 3390

The action of a combined intramuscular injection of oxytocin and ergometrine was studied tocographically in 18 women. The preparation had the strength and duration of action of ergometrine and the speed of oxytocin; it was effective in 2½ minutes.

- Lafortune, J.-G. & Rheault, J. P. E. (1960). **Essai d'évaluation clinique de la réserpine (serpasil) chez le vison. [Clinical evaluation of reserpine in mink.]** — Canad. J. comp. Med. **24**, 243-251. [In French. Summary in English.] 3391

An extensive study of the action of reserpine on mink was made. Optimum dosages by injection and by the oral route were established and there appeared to be a wide margin of safety between active and toxic doses. Fertility was not diminished after continued dosage but further work on this aspect is anticipated.

The authors considered that reserpine in the feed would be of material aid in the prevention of over-excitement.

—R. V. L. WALKER.

- Snyder, W. W., Drury, A. R. & Weaver, E. (1961). **Residues in milk, blood, and urine resulting from various types of antibiotic administration.** — Quart. Bull. Mich. agric. Exp. Sta. **43**, 539-555. 3392

Of the antibiotics infused into the udder only "Longicil" (benzathine penicillin G and procaine penicillin G in aqueous suspension) persisted in the milk for more than 72 hours (up to 324 hours). Aqueous procaine penicillin G, in high dosage, persisted for 72 hours in one cow and for 60 in two. Residues of all the antibiotics except "Liquamast" (oxytetracycline hydrochloride) were demonstrable in untreated quarters. "Longicil" persisted for 36-48 hours longer in foremilk than in total milk; the others persisted equally in foremilk and total milk. In the urine, residues of potassium penicillin G and of aqueous procaine penicillin G persisted for a shorter period than in the milk; "Liquamast" persisted at least 12 hours longer and "Longicil" 96 hours longer. Antibiotics were demonstrable in the blood of

two of eight cows.

Residues disappeared from the milk in under 24 hours after i/m or i/v injection; concentrations in foremilk and in total milk were essentially the same. With procaine penicillin G in sesame oil with 2% aluminium monostearate there was no residue in the milk but, as in the case of "Longicil", there were residues in the blood and urine for long periods. Residues in the urine persisted longer when procaine penicillin G was in oily suspension than when it was in aqueous suspension.

—T.E.G.R.

Boyd, E. M. & Fulford, R. A. (1961). **The acute oral toxicity of benzylpenicillin potassium in guinea pigs.**—Antibiot. & Chemother. 11, 276-283. [Summary in Spanish pp. 299-300.] 3393

Two types of toxicity for g.pigs of benzylpenicillin potassium were observed. Effects of primary toxicity were seen a few hours after oral dosage and were characterized by acute gastro-enteritis, convulsion, excitement and eventually respiratory failure. Oral LD<sub>50</sub> was 5-10 g./kg. body wt. Secondary toxicity took effect 3-10 days after oral administration. There was progressive weakness, hypothermia and finally death from respiratory failure. Secondary toxicity appears to be associated with a substance produced in the body in lethal amounts several days after administration of the drug. G.pigs appeared to be more susceptible to secondary than to primary toxicity of benzylpenicillin potassium. —E.G.

Owen, L. N. (1961). **Fluorescence of tetracyclines in bone tumours, normal bone and teeth.**—Nature, Lond. 190, 500-502. 3394

After the injection of tetracyclines into

the living animal, ultraviolet light revealed yellow fluorescence in fracture callus and osteosarcomata D177 in rats, in new bone of rats with osteomyelitis, in foetuses of pregnant rats, in the teeth of a puppy, and in bone tumours and osteogenic metastases in dogs. Work is planned on the therapeutic possibilities of radioactive or other destructive agents attached to the tetracycline molecule.

—M.G.G.

Pistey, W. R. & Wright, J. F. (1961). **The immobilization of captive wild animals with succinylcholine. II.**—Canad. J. comp. Med. 25, 59-68. 3395

The problems of immobilization, various methods and the various drugs used were discussed, with particular attention to suxamethonium, including the pharmacology of the drug, the various mechanisms of altered responses following administration and other factors, together with information on practical methods and field applications.

—R. V. L. WALKER.

Buechner, H. K., Harthoorn, A. M. & Lock, J. A. (1960). **Immobilizing Uganda kob with succinylcholine chloride.**—Canad. J. comp. Med. 24, 317-325. 3396

Work on the immobilization of these animals was needed to permit a study of their territorial behaviour in the Semliki Game Reserve of Uganda. The reactions of the game to suxamethonium and alkaloidal nicotine were compared. Suxamethonium was better as a paralyzant, eliciting less rigorous muscular response, reducing excitation and giving a more certain and complete period of immobility than did the nicotine alkaloid. Recovery from suxamethonium was rapid with no apparent after-effects.—R. V. L. WALKER.

*See also absts.* 3128 (effect of fasting and cortisone on susceptibility of mice to staphylococci); 3151 (terracycline in fowl coryza); 3192 (bact. resistance to antibiotics); 3204 (trypanosomiasis); 3208 (diampron in canine babesiasis); 3215 (effect of certain drugs and antibiotics on ruminal and caecal fauna in sheep); 3227 (action of merthiolate sodium and Merfen on rabies virus); 3280 (oral DDT against poultry lice); 3282-3284, 3287-3289, 3291 & 3293 (parasitocides); 3297, 3299, 3310, 3313, 3317 & 3319 (anthelmintics); 3455 (book, radioactive isotopes in biochemistry).

## PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

Bhatnagar, D. S. & Chaudhary, N. C. (1961).

**Effect of exposure to sun and exercise on heat tolerance coefficient in Murrah buffalo calves.**—Nature, Lond. 189, 844-845. 3397

Eight buffalo calves 8-12 months old, were divided into 2 groups; each group acted as its own control. At 12 noon, on 6 consecutive hot days the groups were exposed to direct sun or exercise in sun, for 30 min., when the temperature range was 92°-105°F.

and relative humidity varied between 28-47%. The heat tolerance coefficient was calculated daily for each animal. The mean value for the controls within a group was consistent but differed significantly between the groups. There were significant differences between the values before and after exposure to sun. The calves exercised, showed differences between themselves, between days and between treatments. It was concluded that, although the

animals were able to adapt themselves to hot humid climates, they required shade for their comfort.—JOYCE E. HAMMANT.

Leroux, C. (1960). Aspects de la régulation thermique des animaux du désert. Observations personnelles chez le dromadaire. [**Regulation of body temperature in camels.**]—Thesis, Lyon pp. 84. 3398

Following two prefatory chapters on water metabolism in general, the text of the thesis is in two parts of which the first deals with heat regulation in desert animals—mammals which do not habitually depend on water for heat regulation; those which do not utilize water for heat regulation but cannot survive on dry food; those which regularly utilize water (man, dog, sheep, ox, donkey, camel). The second part, of three chapters, is concerned with personal observations on environmental conditions and the watering of camels at work and at rest in winter and summer; the quantity of urine passed and the changes in rectal temperature (during 24 hours) in winter and summer. There is a list of 40 references.—T.E.G.R.

Hill, J. R. (1961). **Reaction of the new-born animal to environmental temperature.**—Brit. med. Bull. 17, 164-167. 3399

The new-born mammal has a lower basal metabolic rate per unit of surface area than the adult, and a smaller maximal metabolic response to cold. In addition, its coat is often of lower insulating power than that of its parent.—M.G.G.

Vacek, Z., Hahn, P. & Koldovský, O. (1961). **The effect of rearing infant rats at three environmental temperatures on the structure of some of their organs.**—J. Anat., Lond. 95, 210-219. 3400

Rats reared from birth until 10-28 days of age at 3, 22 and 33°C. were compared with adult rats kept at the same temperatures for 30 days. Thyroid and adrenal glands, liver and skin of back and tail were examined. It was concluded that adaptation to temperature proceeds differently in infant and adult animals.—R.M.

Robertson, I. S. (1961). **A method of determining embryonic orientation in the hen's egg.**—Nature, Lond. 189, 854. 3401

The method consisted of X-raying the incubated egg to determine the skeletal morphology. The egg was first photographed held in a horizontal position and again when rotated through a 90° angle. The plates,

viewed in order of taking, enabled the direction in which the head was turned to be accurately determined.—JOYCE E. HAMMANT.

Rüsse, I. (1961). Die Laktation der Hündin. [**Lactation in the bitch.**]—Zbl. VetMed. 8, 252-281. [Summaries in English, French and Spanish.] 3402

The average lactation period of 6 weeks in the bitch begins with the production of colostrum for 1-3 days. In the next 2-3 weeks the quantity of milk produced rises while the composition remains constant. In the 4th to 5th weeks the concentration of the milk, particularly the protein concentration, rises. In the 5th and 6th weeks the quantity decreases. Breed differences are slight. The findings were based on the examination of 284 samples from 70 bitches. Tables and graphs show the composition and quantity of bitch's milk.

—M.G.G.

Hardwick, D. C., Linzell, J. L. & Price, S. M. (1961). **The effect of glucose and acetate on milk secretion by the perfused goat udder.**—Biochem. J. 80, 37-45. [Abst. from authors' summary.] 3403

The authors confirmed that acetate and glucose are used to form milk fat and lactose respectively, but show in addition that glucose is essential for the secretion of fluid. They suggested that the secretions of fluid, lactose, protein and fat are to some extent independent processes. The relationship of these findings to the pathway of glucose metabolism was discussed.

Hackett, P. L., George, L. A., Barnes, C. M. & Bustad, L. K. (1961). **Changes in blood constituents in sheep after thyroidectomy.**—Amer. J. Physiol. 200, 1011-1012. [Authors' abst. modified.] 3404

Serum protein-bound iodine was decreased and creatinine increased immediately after surgical thyroidectomy. Lymphopenia developed during the second month, and inorganic phosphorus was elevated during the last part of the period of observation (a year). No significant changes occurred in calcium, haemoglobin, haematocrit, or neutrophils.

Bigland, C. H. & Triantaphyllopoulos, D. C. (1961). **Chicken prothrombin, thrombin, and fibrinogen.**—Amer. J. Physiol. 200, 1013-1017. [Authors' abst. modified.] 3405

Avian blood coagulation studies showed the mean one-stage prothrombin time of plasma from 100 chickens aged 10 weeks (as determined with chicken-brain thromboplastin)

to be 11.4 sec., compared with 10–300 sec. found by other workers; the mean prothrombin content was 137% of human prothrombin levels, when determined by the one-stage prothrombin-time technique, but only 53% by the adsorption and elution technique. Fibrinogen content averaged 346 mg./100 ml. of plasma, compared with 250–400 for man. Chicken thrombin was prepared which gave a mean thrombin time on buffered plasma of 12 sec. Coagulation of chicken plasma with chicken thrombin was found to be highly sensitive to variations in pH, lengthening to over 60 sec. at pH 7.7. Greatly increased clotting times of chicken plasma with bovine thrombin and with rabbit thromboplastin indicated species specificity.

De Gresti, A. (1961). L'arteriografia coronarica nel cane. [**Radiography of the coronary arteries in the dog.**]—*Clin. vet.*, Milano **84**, 134–139. [Summary in English.] **3406**

A description of the technique employed for radiography of the coronary arteries in the dog. There are four photographs.—T.E.G.R.

Kutas, F. (1961). Sertésmagzatok májműködésének vizsgálata enzimdiagnosztikai módszerekkel. [**Enzyme tests for liver function in pig foetuses.**]—*Mag. állator. Lapja* **16**, 139–141. [Summaries in English and Russian.] **3407**

K. compared the activities of enzymes connected with liver function, in the blood of embryo and adult pigs to estimate the extent of activity of the foetal liver. Estimations were carried out on the activity of cholinesterase, cholesterinase, alkaline phosphatase, amylase and glutamic acid-oxalacetic transaminase, in the blood of 31 pig embryos within three weeks of term, and 16 adult bacon pigs. Details of techniques are given. Cho'in- and cholesterinase activity was lower in the foetal blood than in the blood of adult pigs. Of the extrahepatic enzymes, which are decomposed in the liver, alkaline phosphatase had a higher, and amylase a lower activity in foetal than in adult blood. The activity of glutamic acid-oxalacetic transaminase, which is contained in the liver cells, and is only released when the cells are destroyed or damaged, did not show a significant difference in the foetal and adult blood. It was concluded that the foetal liver of pigs is immature with regard to enzyme production and elimination, and its greater size in relation to body weight than in the adult animal only indicates that the foetal

liver is engaged in haemopoietic activities.

—A. SEBESTENY.

Arnall, L. (1961). **Some aspects of dental development in the dog. II. Eruption and extrusion.**—*J. Small. Anim. Pract.* **1**, 259–267. [Author's abstr. modified.] **3408**

The times of eruption and extrusion of the dentitions of a Bull Terrier bitch and her litter were studied in detail using a dental impression technique. Data of times for individual teeth are given and discussed in relation to those of some recognized authorities of canine anatomy.

Beghelli, V., Borgatti, G. & Parmeggiani, P. L. (1960). Esperimenti sull'agnello per la ricerca di un centro riflesso bulbare regolatore dell'attività del reticolo. [**Research on bulbar reflex control of the reticulum in lambs.**]—*Boll. Soc. ital. Biol. sper.* **36**, 1371–1373. **3409**

The technique described by Dussardier (1957) was employed. All the points controlling activity were localized in the dorsal nucleus of the vagus (or immediately adjacent to it) in a tract of the medulla oblongata between two transverse planes which passed, respectively 1 mm. posteriorly and 2 mm. anteriorly to the obex.—T.E.G.R.

McLaughlin, R. F., Tyler, W. S. & Canada, R. O. (1961). **Subgross pulmonary anatomy in various mammals and man.**—*J. Amer. med. Ass.* **175**, 694–697. **3410**

Animals were placed in one of three groups according to the lung lobulation, arterial supply to the lung lobulation, arterial supply to pleura, course of pulmonary vein, terminal arterioles, respiratory bronchioles and anastomoses between bronchial artery and pulmonary. Group I comprised ox, sheep and pig; Group II—monkey, dog, cat; Group III—horse, man. Since the lungs of the horse were structurally similar to those of man, it appeared to be a more suitable experimental animal for the study of emphysema than dog, cat or monkey.—R.M.

Rahlmann, D. F. (1961). **Electron microscopic study of mature bovine spermatozoa.**—*J. Dairy Sci.* **44**, 915–920. [Author's summary modified.] **3411**

Electron micrographs of the head area revealed that the acrosomic granule is an integral structure within the acrosomic cap of mature spermatozoa. The acrosomic cap overlaps the porous-appearing posterior nuclear cap. The midpiece containing outer axial fibrils of at least two different dimensions

appears to have a diameter at least as great as the thickness of the head. Possible contractile elements of the fibrils are closely associated with the basal granules in the neck. Elements of the tail area are also described.

White, I. G. & Wallace, J. C. (1961). **Breakdown of seminal glycerylphosphorylcholine by secretions of the female reproductive tract.**—*Nature*, Lond. 189, 843-844. 3412

Secretions were expressed from the uterus and Fallopian tubes of freshly killed ewes or were washed out with Ringer's solution. When the resulting solution was incubated at 37°C. with ram seminal plasma there was a variable but significant increase in the amount of free choline present. This increase was derived from the breakdown of the glycerylphosphorylcholine in the semen by an enzyme from the female tract. Hence glycerol or phosphoglycerol was liberated, both of which can be metabolized by spermatozoa. The enzyme from the female tract is being studied by the authors.—JOYCE E. HAMMANT.

Du Mesnil Du Buisson, F. (1961). Regression unilatérale des corps jaunes après hystérectomie partielle chez la truie. [**Unilateral retrogression of corpora lutea following partial hysterectomy.**]—*Ann. Biol. anim.* 1, 105-112. [Summary in English.] 3413

Removal of one uterine horn and the greater part of the other, between the 7th and 9th days of the oestrous cycle, caused asymmetrical ovarian function in sows. The corpora lutea present at the time of operation persisted on the ovary of the side opposite to that of partial removal and retained their function. Those on the other side retrogressed (as at the end of cycle). The length of the uterine horn left (which should be less than 26 cm.) appears to be the primary cause of this phenomenon. The stump may be ligated or not.—T.E.G.R.

Neil, M. W., Walker, D. G. & Warren, F. L. (1961). **The mechanism of fructose formation in goat placenta with special reference to the possible involvement of sorbitol or of phosphoric acid esters.**—*Biochem. J.* 80, 181-187. [Authors' summary modified.] 3414

The goat placenta is permeable to sorbitol. Injection of sorbitol into the maternal circulation increases the concentration of both fructose and glucose in the maternal blood, but injection into the foetal circulation increases only the foetal-blood fructose. In the absence

of the foetus, perfusion *in situ* of the foetal side of the goat placenta with sorbitol does not increase the rate of fructose formation.

The presence or absence of sorbitol dehydrogenase (ketose reductase) in the placentas of 15 species of animals cannot be correlated with the nature of the principal foetal-blood sugar. Injection of glucose into the maternal blood leads to a marked increase in fructose 1:6-diphosphate in the placenta and to a decrease in placental inorganic orthophosphate. Current hypotheses of fructose formation from glucose in ungulate placenta were discussed.

Pellegrini, N. & Pellegrini, S. (1960). Il rene durante la gravidanza. Osservazioni istologiche nella specie bovina. [**The kidney during pregnancy, in the cow.**]—*Ann. Fac. Med. vet. Pisa* 13, 107-118. [Summaries in English and French.] 3415

There were no significant macroscopic changes in the kidneys of pregnant cows examined P.M. Histological changes, which started at the 5th-6th month of pregnancy, included: hyperaemia and angiectasia in the glomerular capillaries, in the capillaries surrounding the convoluted tubules and in the medullary ray capillaries; a progressive increase of fat in the nephron epithelium, particularly in the principal segments, so that with advancing pregnancy wide areas of renal lobes undergo marked fatty infiltration.

—T.E.G.R.

Estergreen, V. L., Jr. & VanDemark, N. L. (1961). **Adrenalectomy of the calf and its effects on various blood constituents.**—*J. Dairy Sci.* 44, 928-936. [Authors' summary modified.] 3416

Surgical adrenalectomy was successfully performed in calves without suturing the wall of the vena cava, by using a special forceps to facilitate removal of the gland. The calves were maintained on i/m inj. of 25 mg. cortisone acetate or 5 mg. prednisone plus 5 mg. deoxycortone acetate per 100 lb. body weight, daily or on alternate days. Calves were also maintained in an apparently normal state without steroid therapy by unrestricted access to salt, which was consumed at about four times the rate of a normal calf.

Symptoms of adrenal deficiency began with lethargy and weakness in the legs, followed by anorexia, extreme apathy, a prostration, extreme depression and cardiac arrhythmia shortly before death.

Comline, R. S. & Silver, M. (1961). **The release of adrenaline and noradrenaline from the adrenal glands of the foetal sheep.** — *J. Physiol.* 156, 424-444. 3417

Concentrations of adrenaline and noradrenaline in the adrenal effluent blood of the

sheep foetus were estimated and the output during asphyxia was compared with that during stimulation of the splanchnic nerves; the results were compared with those obtained in the lamb and in the adult. A short account of the preliminary experiments has been published previously [*V.B.* 28, 3759].—R.M.

See also abst. 3451 (book, reactions in the rumen).

## REPRODUCTION AND REPRODUCTIVE DISORDERS

Tomar, N. S. & Desai, R. N. (1961). **Preservation of buffalo bull semen with whole egg containing dilutors.**—*Indian vet. J.* 38, 89-94. 3418

Whole egg (yolk plus albumen) was used with glucose, fructose, sodium citrate and sodium bicarbonate as preservative for buffalo semen. Whole egg, glucose, fructose (40:40:20) without added electrolyte gave the best result and was significantly superior to other media. It preserved buffalo semen for 4.9 days at + 3 motility and 27.95 days for whole life. It was concluded that pH of the whole egg (7.2 to 7.6) was disadvantageous for maintaining progressive motility of the buffalo spermatozoa. The keeping quality of buffalo semen in whole egg with diluents ranged between 19.3 days (glucose-sodium citrate) and 27.95 days (glucose-fructose). The alkaline pH did not appear to affect the viability of spermatozoa.—H. M. BHATIA.

Venkataswami, V. (1961). **A preliminary report on duck's yolk and coconut water as semen diluents.**—*Indian vet. J.* 38, 84-89. 3419

The comparative value was studied of hen's yolk 1:1 sodium citrate with and without coconut water, duck's yolk 1:1 sodium citrate with and without coconut water, duck's yolk 1:2 sodium citrate, and coconut water alone, as diluents for bull and buffalo semen. Duck's egg yolk was a satisfactory substitute for hen's yolk for both of these semens. Duck yolk, citrate in the ratio of 1:2 was better than in 1:1 ratio. Further, the addition of tender coconut water (pH 6.7) to either of these yolks had significant beneficial effect especially with semen of high quality. Coconut water alone was not satisfactory. With semen of both species, inclusion of pH-adjusted coconut water gave on average 60.4% of motile spermatozoa with hen's yolk citrate and duck yolk citrate, which were significant at P .05 and P .01 levels, respectively, when compared to these diluents without it.—H. M. BHATIA.

Rothe, K. (1961). Die Wirkung des Blutes auf die Beweglichkeit und Lebensdauer von Rindersperma. [**Effect of blood on motility and survival of bull semen.**] — *Zuchthyg. FortpflStörung. u. Besamung* 5, 31-35. [Summaries in English and Russian.] 3420

Fresh blood was added to undiluted bull semen at 30° C., and to semen diluted with egg yolk and sodium citrate at 30° or 5° C. In diluted semen stored for 24 hours in the refrigerator, then warmed to body temp. and mixed with blood, 80% of the spermatozoa remained motile for 10 hours when the proportion of semen to blood was 1:1, and 2½ hours when the proportion was 1:5. It was considered that bleeding of the cervix due to injury at artificial insemination would not affect spermatozoa.—M.G.G.

de Groot, B. (1961). **Ageing of bull sperms at the end of the passage through the epididymis.**—*J. Reprod. Fertil.* 2, 107-116. [Abst. from author's summary.] 3421

The ageing of spermatozoa during passage through the epididymis was investigated in four pairs of monozygous twin bulls, which served twice weekly during 4 weeks. Immediately after service, motility was estimated and spermatozoa were stained with eosin anilin blue (pH 6.7) both at 37 and at 15° C., and thus without and with cold shock.

Hafez, E. S. E. & Ensminger, M. E. (1961). **Transfer of ova to the bursa ovarii and the 'suspended loop' of tube in the rabbit.**—*Nature, Lond.* 190, 557-559. 3422

Removal of part of the ovarian bursal membrane in 7 rabbits did not affect egg pick-up and transport, but attachment of the suspended loop of the ampulla to the mesosalpinx (with adhesion formation) reduced the pick-up by 13-33% of ova shed. Twenty synchronous recipient does picked up an average of 10% of one-cell superovulated ova transferred into the bursa. This average was raised to 12% when 8-16 cell ova were used. On the opposite side in these recipients, 42%

of ova traversed the tubes when transferred directly into them. Animals allowed to proceed to term produced normal young.

—F. L. M. DAWSON.

Fabian, G. (1961). Zum zyklischen Verhalten vornehmlich der Höhe des Endometriums beim Schwein. [**Cyclical changes in the thickness of the endometrium in pigs.**]—Zbl. VetMed. 8, 214-251. [Summaries in English, French and Spanish. English summary modified.] 3423

During the oestrous cycle in the pig the endometrium is thickest at the time of ripening of the corpus luteum (10 days after ovulation) and thinnest at the time of ovulation. The surface epithelium behaves in the opposite manner. The uterine glands are most developed when the endometrium is thickest, and are least convoluted when it is thinnest. The findings are based on a study of the ovaries and uterus of 800 healthy pigs.

Kanagawa, H. (1960). **Anatomical and pathological studies on the sex organs from slaughtered bulls in Hokkaido. I. Anatomical findings.**—Jap. J. vet. Res. 8, 251-260. 3424

Kanagawa, H., Ishikawa, T., Kawata, K. & Fujimoto, Y. (1960). **Anatomical and pathological studies on the sex organs from slaughtered bulls in Hokkaido. II. Some observations on remnants of the Müllerian duct.**—Ibid. 323-330. [In English.] 3425

I. Genital organs were obtained from 15 bulls with known histories of which only 2 had been discarded for low fertility. Eight of the remainder had a normal semen picture before slaughter. Measurements and weights of all the sex organs are tabulated. In 11 cases of all ages bilateral fine fibrous adhesions were observed between the testicle, epididymis, and vaginal tunic. Four different types of attachment of the ampullae to the seminal vesicles were described and figured.

II. Six out of 19 bulls had Müllerian remnants of the type described, e.g. by Blom & Christensen (1947) and histologically resembling an immature bovine uterus or the Müllerian remnant in cases of white heifer disease.—F. L. M. DAWSON.

Dawson, F. L. M. (1961). **The bovine uterus—histopathology.**—Vet. Rev. Annot. 7, 29-37. 3426

In this review of the literature special attention was paid to endometritis and to uterine biopsy.—R.M.

Knudsen, O. & Velle, W. (1961). **Ovarian oestrogen levels in the nonpregnant mare: relationship to histological appearance of the uterus and to clinical status.**—J. Reprod. Fertil. 2, 130-137. [Authors' summary modified.] 3427

Oestrogen was determined in follicular contents from 32 non-pregnant mares in different phases of the oestrous cycle, and three sterile mares with ovarian dysfunction. Estimations were made by a specific chemical method which permitted separate determination of oestrone and oestradiol-17 $\beta$ . The phases of the oestrous cycle for each mare were determined by clinical observations, P.M. examinations of the genital organs and histological investigations of the uterus. In pro-oestrus, the authors found circumscribed groups of glandular ducts which do not seem to have been reported previously. In oestrus both oestrone and oestradiol-17 $\beta$  found were highly increased compared with other phases of the cycle. In anoestrus, increased oestradiol-17 $\beta$  was recorded for animals with autumn follicles, compared with the other anoestrous mares. Two mares which had persistent follicles and were in metoestrus showed elevated oestrogen values. In two cases diagnosed as cystic glandular endometritis, high oestrogen levels were encountered. In a single mare with a follicle present for a continuous period of at least 3 months (probably for more than 1 year), no oestrogens were demonstrated in the follicular fluid in spite of clinical signs of heat. In all mares except the last, oestradiol-17 $\beta$  was present in large amounts, relatively to oestrone. The mean values for the total amount of follicular contents analysed were 33.8  $\mu$ g. oestradiol-17 $\beta$  and 2.3  $\mu$ g. oestrone per 100 ml. (uncorrected values).

Shokeir, A. A. & Adawy, A. T. (1961). **Inactieve ovaria bij de Egyptische buffelkoe. Klinische waarnemingen en hormonale behandeling. [Diagnosis and hormone treatment of inactive ovaries in Egyptian buffaloes.]**—Vlaams diergeneesk. Tijdschr. 30, 148-154. [In Flemish. Summary in English.] 3428

Thirty-nine anoestrous buffaloes, aged between 3.5 and 13 years, were examined and were given one of ten different hormone treatments. The results are summarized in a table. Sixteen were injected with between 10 and 30 mg. stilboestrol: 9 came to oestrus 1-10 days afterwards and 6 conceived. Of 14 injected with gonadotrophic hormones, (such as 1,500

i.u. of PMS), 9 came to oestrus 3–20 days afterwards and 9 conceived.—R.M.

Sanger, V. L. & Bell, D. S. (1961). **Comparative effect of Ladino clover and bluegrass pasture on fertilization of ova in sheep.**—*Cornell Vet.* 51, 204–210. 3429

Forty-four Columbia gimmers were grazed, half on Ladino clover and half on bluegrass through summer and autumn; vasectomized rams were introduced 24th August and by 10th September 18 animals on clover and 16 on bluegrass had shown heat. All females were served at first heat after 10th September and slaughtered three days later. Oviducts were flushed for ova and some of these organs and also endometria were sectioned. From the clover group, with 26 corpora lutea, 25 ova were recovered with 53% cleaved; 30 corpora were associated with 26 recovered ova on bluegrass, 72% were cleaved. It is concluded that clover oestrogen interferes with the powers of cleavage or with spermatozoa transport. Follicle maturation may be slightly inhibited.—F. L. M. DAWSON.

McDonald, M. F. (1961). **Studies of the response of the anoestrous ewe treated with progesterone and pregnant mare serum.**—*J. agric. Sci.* 56, 397–406. 3430

The aim was to determine whether ewes artificially ovulated in deep anoestrus, after pre-sensitization with progesterone, showed cyclic type histological responses in oviduct, uterus and cervix similar to those seen naturally just before the breeding season.

Thirty-five New Zealand Romney Marsh ewes were run with vasectomized rams from November onwards and received a total of 80 mg. progesterone i/m twice daily over 4–12 days. A further 15 ewes received 750 i.u. pregnant mare serum s/c 40 hours after the final treatment with progesterone, 10 received P.M.S. only and 10 were untreated controls. Progesterone alone produced neither ovulation nor oestrus. Six P.M.S. treated ewes and all 15 treated with both hormones ovulated; only one of the 15 showed heat. All parts of the tract showed, histologically, a response to either or both the hormones, which was greatest in those which ovulated. In no case was a cycle initiated. Observations on cervical mucus and vaginal epithelium were made on all ewes.—F. L. M. DAWSON.

Brody, S. & Carlström, G. (1961). **Clinical application of a serological method for the**

**determination of human chorionic gonadotrophin.**—*Nature, Lond.* 189, 841–842. 3431

Human chorionic gonadotrophin (HCG) was determined in sera of pregnant women by a complement-fixation test. Antiserum was prepared from rabbits, each immunized with 12,500 i.u. HCG, administered over 3 weeks with a booster injection of 3,000 i.u. 4–6 weeks later. Blood was withdrawn 1 wk. later, serum separated, heated for 30 min. at 56°C. and stored at –30°C. This serum was tested for antibodies, using HCG dissolved in sera of non-pregnant individuals, and positive results were obtained at minimum levels of 0.25 i.u./ml. Blood collected from 148 women in various stages of pregnancy was tested. No false positives were found, amounts varied from 0.7–340 i.u./ml. serum, the highest levels being found in the first trimester. It was concluded that the method was sensitive and specific.—JOYCE E. HAMMANT.

Preibisch, J. (1961). **Próby zastosowania badania histologicznego narządu rodnego klaczy do rozpoznawania schorzeń tego narządu. [Diagnostic value of biopsy of the cervical mucosa in mares.]**—*Med. Wet., Warszawa* 17, 257–262 & 342–348. [In Polish. Summaries in English, French, German and Russian.] 3432

Histological examination of uterine and cervical mucous membrane from 98 slaughtered mares revealed lesions in 64, and 53 of these had similar inflammatory changes in both cervix and uterus. Examination of uterine washings was of no practical diagnostic value. The author is of the opinion that biopsy of cervical mucosa would be of great diagnostic value in investigations of uterine disorders in mares.—M. GITTER.

Hashimoto, H. (1961). **Diagnosis of pregnancy in the ewe.**—*Canad. J. comp. Med.* 25, 51–53. 3433

Examination of cervical mucus from ewes during the progression of pregnancy, indicated that a simple and accurate diagnostic procedure could be instituted. Preliminary studies revealed that cervical mucus changed from clear and colourless to opaque and pale yellow within a month after admission of the ram to the ewes. The elastic flow of the cervical mucus decreased from that of egg-white to a thick, rubber-like mass by the fourth week of pregnancy. The method proved 100% accurate three weeks after the cessation of the breeding season, as indicated

by the lamb drop 90 to 105 days later.

—R. V. L. WALKER.

Ström, B. (1961). Sterilitetsrubbingar i samband med a. i. och deras behandling. En jämförelse mellan olika terapeutiska metoder. [**Bovine sterility encountered during artificial insemination and its treatment.**]—Medlemsbl. Sverig. VetFörb. 13, 221-224 & 227-229. [In Swedish.] 3434

S. examined statistically the results of treatment for sterility of 717 cows during 12 months at an A.I. station. Diagnostically the material was divided into animals with and without symptoms of infection, and within these indication groups three principles of treatment were compared: iodoform, tetracycline, and other therapeutic agents. Efficacy was judged by incidence of pregnancy, length of treatment period and number of treatments and of inseminations needed. The differences were not significant but within the group with symptoms of infection iodoform and tetracycline tended to give a higher incidence of pregnancy, particularly with regard to the number of inseminations needed, and this tendency was evident in both indication groups: it was more pronounced for iodoform than for tetracycline. In the group with symptoms of infection, tetracycline tended to give a slightly shorter treatment time and lower frequency of treatment; possibly there may have been a relatively larger number of acute than of chronic cases in the material, and these were not differentiated.—F.E.W.

McClure, T. J. (1961). **Investigation of infertility problems in pasture-fed dairy herds with restricted mating periods.**—N. Z. vet. J. 9, 9-12. 3435

McClure presents a scheme of systematized approach to breeding problem investigations in herds mating only from September-December. A suggested form is reproduced for analysis of individual bull performance in a herd. Problem herds have been found to be mainly those with abortion, or those with less than half the cows holding to first service. Anoestrus problems are attributed to hypocuprosis, aphosphorosis, and gross underfeeding; Ayrshires are particularly susceptible: blood samples should be collected for copper, calcium and phosphorus estimation. In herds with an abortion problem, in 40% this was due to brucellosis, in 20% to leptospirosis, miscellaneous 5% and undiagnosed 35%. When cows return to service McClure clearly

recognizes the importance of too-early service after calving, and of nutritional lactational stress, which accounted for up to 60% of such herds. The latter cause tends to affect the older stock before involving calved heifers. Cycle lengths tend to be increased.

—F. L. M. DAWSON

Ashton, G. C. (1961).  **$\beta$ -globulin type and fertility in artificially bred dairy cattle.**—J. Reprod. Fertil. 2, 117-129. [Author's summary modified.] 3436

The serum  $\beta$ -globulin types of 360 cows in fifteen Jersey herds in the Nambour region of Queensland and 423 cows from nineteen herds of Australian Illawarra Shorthorn cattle in the Kingaroy region were determined, together with the  $\beta$ -globulin types of eighteen Jersey bulls and nine Australian Illawarra Shorthorn bulls used for artificial insemination. It was found that  $\beta$ -globulin type had a highly significant effect on fertility in both regions. In the Nambour region, the breeding efficiency (percentage of inseminations resulting in pregnancy) for matings between partners both homozygous at the  $\beta$ -globulin locus was 58% compared with 48% for partners one or both of which were heterozygous. In the Kingaroy region, the comparable breeding efficiencies were 63% and 47%. In each region, the breeding efficiency with the homozygous bulls was about 4% greater than the mean for the region. The practical significance of these observations is discussed.

Hanly, S. (1961). **Prenatal mortality in farm animals.**—J. Reprod. Fertil. 2, 182-194. [Author's conclusion modified.] 3437

The literature reviewed indicates clearly that the knowledge of the causation of the death of the fertilized ovum and embryo remains incomplete. While numerous factors have been shown to influence embryonic death either by increasing or decreasing it, there is no factor or combination of factors so far investigated, whose control has eliminated it in a group or population of animals. This residual embryonic death which appears to be relatively constant in amount, particularly in cattle, would seem to have to be accounted for by a more universally active factor than any of those so far investigated. [See also preceding abst.]

Vandeplassche, M. (1961). **Onderzoekingen over vruchtbaarheid en kunstmatige inseminatie bij het varken.** [Studies on fertility

and artificial insemination in pigs.] — Med. Veeartsenijschool Ghent 5, No. 1 pp. 136. [In Flemish. Summaries in English, French and German.] 3438

In this monograph, the author reviewed the literature and presented his own observations on absence of oestrus; infertility accompanied by normal oestrus; influence of lactation, and PMS and progesterone injections on fertility; artificial insemination (experience gained from 6,000 inseminations). The author's main findings are contained in the English summary.—R.M.

Becker, R. B., Wilcox, C. J. & Pritchard, W. R. (1961). **Crampy or progressive posterior paralysis in mature cattle.**—J. Dairy Sci. 44, 542-547. 3439

See also absts. 3169 (ovine epididymitis); 3178 & 3180 (leptospiiral abortion); 3190-3191 (vibriosis); 3209 (toxoplasmal stillbirth in cattle); 3223 (abortion and foetal lesions in pigs due to Aujeszky's disease); 3245 (ovine virus abortion); 3446 (report, Rhodesia and Nyasaland Federation); 3447 (report, Netherlands).

## ZOOTECHNY

Gordon, I. & Williams, G. (1961). **The milk marketing board twin calf trial: an interim report.**—Vet. Rec. 73, 359-370. 3440

The interim results are reported of a 2 year field trial on cattle to test serum gonadotrophin (PMS) as a means of increasing twin births. A single s/c inj. of freeze-dried PMS using 5 dosage levels was given to 486 cattle 15-19 days after the previous heat. No abnormal symptoms at oestrus have been observed but ovulation without oestrus occurred in 14.4% of the animals. There was evidence of a dose-response relationship; at 800 i.u. 33% of the cattle produced additional eggs (range 1-5, mean ovulation rate 1.43) whilst at 2,000 i.u. 56% did so (range 1-25, mean ovulation rate 3.94). Seventy-eight per cent became pregnant after first insemination, and when checked in the sixth or seventh week of pregnancy, 20.5% of these had multiple fetuses at 800 i.u. and 39% at 2,000 i.u. Heavy loss of eggs occurred in the early weeks of pregnancy whilst total litter loss was observed in 30.6% of 36 animals found to be carrying multiples compared with 23.8% of

Examination of the records of 12,387 dairy bulls of 5 breeds and 448 beef bulls of 4 breeds revealed that 323 dairy and 10 beef bulls representing all 9 breeds had died or been removed because of "crampy", a syndrome characterized by intermittent spastic contractions of the muscles of the hind legs of mature cattle of both sexes. Chi-square analysis showed that the frequency of occurrence differed significantly amongst dairy breeds, being most frequent in Ayrshires and Friesians. Numerous familial relationships were demonstrated and indicated almost conclusively a genetic background for the condition. Although multiple gene inheritance cannot be discounted, inheritance appeared to be as a single recessive factor with incomplete penetrance.—A. ACKROYD.

42 carrying singles and 6.7% of 75 not subjected to pregnancy diagnosis. Whilst this high loss may be partly associated with the examination, there did appear to be some association between egg number and loss. Up to the present, calvings in 127 cattle (63.5%) injected with doses of 800-1,000 i.u. have been noted; 29 of these (22.8%) have been multiples (22 sets of twins, 6 of triplets and 1 of quintuplets).—A. ACKROYD.

Anon. (1961). **The pig industry in Great Britain in 1960—a sample survey of 1,500 herds.** pp. 2+21 tables. London: Pig Industry Development Authority. [HFM/JMM/2103] 3441

This is a general survey of the types of pig-keeping, breeding policy, feeding practices and marketing. Among other things, there is information on housing and management of breeding stock, methods of outdoor rearing, provision of artificial heat for piglets, use of farrowing crates or rails, and proportion of herds fed antibiotics, vitamins and minerals.—R.M.

See also absts. 3456 (book, animal husbandry).

## TECHNIQUE AND APPARATUS

Dawson, J. B. & Heaton, F. W. (1961). **The determination of magnesium in biological materials by atomic absorption spectrophotometry.**—Biochem. J. 80, 99-106. [Authors' summary modified.] 3442

An instrument suitable for the determination of magnesium by atomic absorption spectrophotometry is described. Analyses may be carried out on serum, urine, blood cells and solutions of the ash from food or faecal

materials after simple dilution and acidification with hydrochloric acid. No significant effect is produced by other inorganic ions. The organic constituents of samples cause slight over-estimation of the magnesium concentration.

Zakiewicz, M. (1961). Reanimacja serca psa. [Re-animation of the heart in dogs.]-Med.

Wet., Warszawa 17, 264-267. [In Polish. Summaries in English, French and German.] 3443

A description of 3 cases of heart re-animation by direct cardiac massage and application of adrenaline into the right ventricle. The dogs were 10 months, 4 years and 6 years old.—M. GITTER.

## REPORTS

Canada. Province of Alberta. (1960). **Annual Report of the Department of Agriculture of the Province of Alberta for the year 1959.** pp. 244. Edmonton: L. S. Wall, Queen's Printer. [Report of veterinary services pp. 169-196; E. E. Ballantyne, Director.] 3444

No epidemics of serious diseases occurred in poultry or other animals during the year. In general, all losses were from regular diseases of nutritional, bacterial, viral, fungal, parasitic and chemical origin. Faulty management and nutrition contributed greatly as predisposing factors.

There appeared to be an increasing awareness of the value of disease prevention and control. PSITTACOSIS was diagnosed for the first time in Alberta in two laboratory workers who had handled specimens.

Individual sections of the report deal more specifically with Q FEVER survey in cattle and sheep; BRUCELLOSIS restricted area scheme; veterinary inspection of livestock in stockyards; improved system of obtaining vital statistics, and laboratory service reports. Over 15,000 specimens were examined, and some 31,000 tests carried out on blood samples from cattle, sheep, buffalo, elk, moose, deer and poultry.—R. V. L. WALKER.

Summerville, W. A. T. (1960). **Australia. Queensland. Annual Report of the Department of Agriculture and Stock for the year ended June 30th, 1960.** pp. 126. Brisbane, Australia: S. G. Reid, Govt. Printer. [Division of Animal Industry pp. 69-100.] 3445

Treatment of staphylococcal MASTITIS is still difficult. *Klebsiella* sp. was isolated from cases of acute mastitis. *Nocardia* sp. has been isolated from cases of persistent mastitis. *Pseudomonas* sp. was found in an outbreak in which three cows died. *Pasteurella septica* was recovered from milk in this herd. Compulsory testing for BOVINE TUBERCULOSIS was continued but was hampered by a shortage of veterinary surgeons. BRUCELLOSIS was common in cattle, and in selected herds where

"abortion storms" occurred whole-herd vaccination was used. Although the incidence is low in pigs, a very high incidence was found in one herd. Test-and-slaughter is being applied in control. EPIDIDYMITIS in sheep was detected by clinical examination, microscopic examination of semen smears and blood tests. Some cases of BLACKLEG occurred in vaccinated cattle. In two calves only the psoas muscles were affected.

Some sheep sera showed high titres for *Vibrio fetus*. An *Actinobacillus* was isolated from cases of orchitis in rams accompanied. A c.f. test was devised for detection of the disease. Infected boars did not transmit *Leptospira pomona* to sows. Acute infection with this species occurred in cattle with heavy mortality in calves. Vaccination confers only brief protection. Abortions in cows and sows are common, and both *L. pomona* and *L. hyos* are incriminated.

Interest in MELIOIDOSIS increased since cases occurred in man in North Queensland. Since 1955 the infection has been detected in 45 pigs, 24 sheep, 13 goats, 3 cattle and 1 horse. A c.f. test did not detect all cases in sheep.

Numerous outbreaks of BOVINE CONTAGIOUS PLEUROPNEUMONIA occurred, many associated with the introduction of cattle by sea from the Northern Territory. Where possible the disease was controlled by test-and-slaughter or by a combination of this and vaccination.

Studies on TICK FEVERS in cattle were continued along four lines—natural history of infection with the causal organisms, transmission of immunity from dam to offspring, evaluation of vaccination, and serological changes in immunized cattle. Infection of *Boophilus microplus* with *Babesia argentina* takes place when ticks are in the adult stage during the febrile stage of the disease, and/or when parasites can be detected in peripheral blood. Transmission occurred when larvae

had been attached for only two days. *B. argentina* which had been kept as a laboratory strain for vaccination and transmitted by inoculation was not infective for ticks but field strains were always infective for ticks. The nymph may be the important transmitting stage for *B. bigemina*. When ticks infected with *B. bigemina* were matured on a sheep and a goat the infection persisted in the subsequent generation, and could be transmitted to cattle. Blood from a sheep taken 14 days after infected ticks were attached was infective for cattle. When cows were infected with *B. argentina* by inoculation or by attachment of ticks, a passive immunity of about six weeks' duration was established in the calves. Blood containing *B. bigemina* and *B. argentina* was uniformly infective when stored in a refrigerator for 2 to 6 days. Very young calves do not seem to be more susceptible than older animals to tick fevers. There are considerable variations in the persistence of infection in "bleeders" used for vaccination, e.g. with *B. argentina* one animal ceased to be useful after 5 months, one after 20 months. An animal which has been infected by inoculation and has shown a reaction, and has then eliminated the infection, may not react to a subsequent inoculation from the same source, but may do so after exposure to a field strain. Transmission of *Borrelia theileri* occurred by both nymphal and adult *B. microplus* with a pre-patent period of 14 days.

TOXOPLASMOSIS was detected in a Dorset Horn flock with a history of poor lambings.

POSTERIOR PARALYSIS in calves (in one case only the forequarters were affected) was seen again, with low morbidity but high mortality. Lesions were typical of non-purulent encephalomyelitis.

The presence of EQUINE INFECTIOUS ANAEMIA was confirmed by taking serum from cases in Queensland to Japan for inoculation into infected and control horses. Serum submitted to a laboratory in the U.S.A. showed that INFECTIOUS RHINO-PNEUMONITIS (formerly referred to as influenza) is also present in Queensland. In both this disease and E.I.A., siderocytes are present in the blood, and hence they cannot be used for positive diagnosis of E.I.A. E.I.A. is still confined to a relatively small area but appears to have been present for some years.

*Echidnophaga gallinacea* is now widely distributed, but outbreaks appear to be isolated. In studies of insecticides for protection against SHEEP BLOWFLY, "jetting" with Bayer 1090 at

0.1% was not effective; Bayer 1752 was effective for 4 weeks; Bayer 1751 at 0.05% was effective for 11 weeks; "Korlan" was effective for 14 weeks at 0.1% and 20 weeks at 0.2%. Diazinon at 0.02% was effective for 11 weeks. As flies showed increasing resistance to chlorinated insecticides, organic phosphorus compounds were used instead, and interest in the Mules operation revived. SHEEP NASAL BOT (*Oestrus ovis*) appears to be more prevalent than formerly. *Siphona exigua* has been generally suppressed by the extensive use of residual insecticides, but has shown local increases. Further outbreaks of *Boophilus microplus* infestation occurred on the Darling Downs. Other outbreaks were thought to have resulted from illegal movements of cattle, and in some cases to the use of spraying instead of dipping as a control measure. Ticks are becoming increasingly resistant to chlorinated hydrocarbon insecticides, but DDT resistance is still slight and localized. It is not of importance if dipping fluids are maintained at full strength and thoroughly stirred before use. Licking was the major factor affecting the persistence of DDT on the hair. Heavy infestations with *Psorergates ovis* are still localized. There is evidence of a considerable amount of non-specific itch in sheep.

MUSCULAR DYSTROPHY in lambs with unthriftiness, altered gait, ruminal tympany and distress and prostration on exercise, was not invariably accompanied by lesions suggestive of "white muscle disease", and preliminary trials with administration of selenium and vitamin E did not give clear cut results.

SELENOSIS was associated with two "indicator" plants, *Morinda reticulata* and *Neptunia amplexicaulis*. Shedding of the fleece occurred in affected sheep.

Studies on HYPOCUPROSIS in cattle showed that (a) the cause of low copper status appeared to be an interference with metabolism of Cu rather than low values in pasture, (b) sheep and cattle reacted to molybdenum and inorganic sulphate in the same way, (c) sheep maintain copper reserves on pastures where cattle have low Cu status, (d) the molybdenum level in pastures was low and accordingly it and sulphate were unlikely to influence Cu status, (e) Cu status was lowest in cattle when pasture was in the young, growing stage, and (f) in spite of the low Cu status of the cattle there was no marked response to Cu therapy.

Studies on PHOSPHATE DEFICIENCY in cattle included the relationships between the

concentration of P in pasture and factors affecting its intake.

In horses, BIRDSVILLE DISEASE and STRANGLES were reported.

Conditions noted in cattle included:—SALMONELLOSIS, TRICHOMONIASIS, ABORTION (*Br. abortus*, *Tr. foetus*, *V. fetus*, *Mycobacterium tuberculosis*), PNEUMONIA, ANAPLASMOSIS, WINTER DYSENTERY, a syndrome in cattle grazing an oat crop (cessation of lactation, muscular stiffness, diarrhoea), ST. GEORGE DISEASE (oedema of throat and brisket, lachrymation and photophobia), EPHEMERAL FEVER, SAWFLY POISONING.

In outbreaks of LOCOMOTORY DISTURBANCES in pigs the following conditions were found:—non-purulent encephalitis, non-purulent lepto-meningitis, purulent meningo-encephalitis, polyarthritis, and avitaminosis A.

Other conditions in pigs were "Snuffles" (suggestive of, but not infectious rhinitis), erysipelas, sparganosis, Glässer's disease, salmonellosis, sarcoptic mange, metritis, pneumonia and septicaemia (*Klebsiella* sp.), blindness (non-purulent encephalitis), oedema disease, terminal ileitis, injuries by drenching guns, septicaemia (*Pseudomonas*), swine pox, scours (iron deficiency in some cases), agalactia from various causes including excessively hot weather, parakeratosis (likely to become a seasonal disease in winter-spring on lime rich soils where a meat and bone meal supplement rich in Ca replaces separated milk), photosensitization in white pigs (possibly associated with the occurrence of abortions), paralysis (some responses to Cu therapy).

In fowls the following were recorded:—Pullorum disease, infectious laryngo-tracheitis, nutritional conditions, streptococcal septicaemia in ducklings, epidemic tremor, *Tetrameres* sp. in the crop, mortality in which the mash contained 21,850 p.p.m. of manganese (gastro-intestinal erosions, diarrhoea, thirst).

Cases of poisoning were due to arsenic (in cattle from ingestion of weed-killers, in sheep after dipping and ingestion), phosphorus, lead, salt, kerosene, copper (in rams after drenching for Cu deficiency). There were mortalities in cattle after dipping in vats freshly charged with chlorinated hydrocarbon insecticides (except DDT). Endrin sprays were particularly toxic to cattle. Heavy mortality in fowls followed spraying with endrin and with a mixture of lindane, aldrin, BHC and DDT.

The following poisonous plants caused mortality in horses:—*Crotalaria retusa*, *C.*

*dissitiflora*; in cattle—*Acacia georginae*, *Myoporum deserti*, *Xanthium pungens*, *Solanum auriculatum*, *Conium maculatum*, *Lantana camara*, *Duboisia myoporoides*, *Cestrum parqui*, *Trema aspera*, *Gastrolobium grandiflorum*, *Salvia coccinea*, *Erythrophloeum chlorostachys*, *Verbesina encelioides*; in cattle and sheep—*Terminalia oblongata*, *Salvia reflexa* in sheep—*Euphorbia drummondi*, *Bulbine semibaccata*, *Threlkeldia prociflora*; in pigs—*Schinus molle*, *Xanthium pungens*, *Malva parviflora*, *Melia dubia*; in ducklings—*Euphorbia hirta*; also *Pteridium aquilinum*, *Asclepias fruticosa*, *Solanum torvum*, *Sorghum alnum* (animals affected not specified).

—H. McL. GORDON.

Federation of Rhodesia and Nyasaland. (1960).

**Report of the secretary to the Federal Ministry of Agriculture for the year ended 30th September, 1959.** [Corry, J. R.] pp. 212. Salisbury: Govt. Printer. 10s. 6d. [Report on Veterinary Services pp. 163-194.] 3446

There was an existing outbreak of FOOT AND MOUTH DISEASE in the Wankie Native District at the beginning of the year. Two other outbreaks were recorded, one in the same district and one in the Beitbridge Native District. Both the Wankie outbreaks were due to virus S.A.T.1, and that at Beitbridge to S.A.T.2. Total inoculations were 10,076 cattle with S.A.T.1 field virus and 5,755 with virus S.A.T.2. The main danger of spread was by game movements through the infected areas. The Federal Government authorized funds to erect a game fence in the vicinity of the Wankie Game Reserve; this fence will be 110 miles long when completed.

TRYPANOSOMIASIS—Infected herds are now maintained in the infected areas and reliance is placed on trypanocidal drugs to control outbreaks.

Drug trials have been carried out in an area of high tsetse fly density with a considerable proportion of cattle infected, to find out the protective periods of each drug. Prothidium at 2 mg./kg. protected for 175 to 209 days. A 50% increase in the dose protected for 203 to 225 days (in some areas up to 284 days). Re-inoculation, giving a 4 mg./kg. dose only protected for 32 to 65 days. As this was given in tablets in which the formulation gave glucoside formation and degradation of the trypanocidal properties, according to the manufacturers, the results are not reliable. Berenil was used for relapses. Prothidium

proved unreliable when used after Ethidium bromide, Berenil and Antrycide, breakdowns occurring after periods up to 50 days.

Antrycide pro-salt (old and revised formulae)—With both these drugs infection reappeared in about 118 days.

Berenil, generally used as a stopper, gave protection for 18 to 20 days.

Ethidium bromide in doses of 1–2 mg./kg. gave protection for 31 to 60 days.

Metamidium—In a test 5 cattle previously treated first with Antrycide D.M.S. and secondly with either Antrycide D.M.S., Prothidium or Metamidium, were again treated with Metamidium, and there was no breakdown in an observed period of 175 days.

There were only 28 confirmed cases of RABIES. These were 24 dogs and 1 each of cat, jackal, cattle and pig. It is considered that control measures (vaccination of dogs with Flury avianized vaccine and the destruction of strays) must be continued without any relaxation.

Parasitology. Stock owners are kept informed of the various types of parasites which infect livestock by press articles, pamphlets and talks and also when visits are made for other reasons to farms.

The parasites include bilharzia and liver fluke, involving snail control, in addition to helminth parasites of the alimentary tract. Surveys of slaughtered cattle revealed an incidence of 69.15% infection of schistosomiasis and a separate survey showed 3% had visible bladder lesions.

There is an officer in charge of the Parasitological section of the Department to co-ordinate the control of all parasites.

Mortality from TICK-BORNE DISEASES has declined. In general it is considered there is an improvement in tick control.

HEARTWATER—The widespread use of chlorinated camphene dips to kill the bont ticks has materially reduced mortality. Calf mortality of 1% on the low veld is approximately the loss expected by ranchers. It is evident that the tick is extending its range to the high veld.

There were no outbreaks of EAST COAST FEVER (*Theileria parva*).

THEILERIOSIS (*Gonderia lawrencei*) caused 87 outbreaks and 274 deaths of cattle. Strict control of Rhipicephalid ticks is enforced by statute.

The incidence of ANAPLASMOSIS has increased. Many farmers recognize the disease and successfully treat infected cattle with

Terramycin (oxytetracycline).

ANTHRAX—42 deaths recorded during the year included 32 cattle, 6 pigs and 4 men. There were also 13 cases of malignant carbuncle among African people who were treated in hospital.

Vaccination of 84,931 animals included 79,669 cattle, 2,039 sheep and goats, 194 pigs and 2,030 donkeys.

TUBERCULOSIS—37,981 cattle were tested regularly and 92 reacted. The annual test on a large ranch in Matabeleland of 51,369 cattle showed 1.13% reactors.

There were 155 outbreaks of BLACKLEG (*Clostridium chauvoei*) and 966 deaths. The disease is widespread in Southern Rhodesia. Incidence is increasing in the Native areas. There was one outbreak of *Cl. septicum* infection.

The three main INFERTILITY DISEASES are contagious abortion, contagious epididymitis and vaginitis ("epi-vag"), and vibriosis. The first is controlled by the use of Strain 19 vaccine. Control of "epi-vag" is not so easy, there is no vaccine and no diagnostic test. Artificial insemination prevents the spread but infected animals must be quarantined. Vibriosis occurred on 55 properties. The disease is controlled by A.I. Other causes of infertility are malnutrition, bad management and mineral and vitamin deficiency.

SKIN DISEASES mentioned are demodectic and sarcoptic MANGE and SHEEP SCAB (one outbreak). STREPTOTHRICOSIS (Senkobo skin disease) occurs in the Native Districts.

In Poultry FOWL POX, NEWCASTLE DISEASE, FOWL CHOLERA, BACILLARY WHITE DIARRHOEA, SPIROCHAETOSIS, COCCIDIOSIS and INFECTIOUS SYNOVITIS all occurred.

NON-SCHEDULED DISEASES mentioned are Ephemeral fever, Ophthalmia in weaners, *Vibrio fetus*, Bovine Coccidiosis, Myiasis, African Horsesickness, Helminthiasis, Aphosphorosis, Enterotoxaemia and Bowel Oedema in pigs. POISONING was recorded from HCN, arsenic, zinc, BHC, DDT and toxaphene (98 deaths). Organophosphorus compounds, cyclodeines, (Aldrin caused death in 17 poultry). Fertilizers—nitrates (caused 53 deaths), superphosphates (3 deaths), urea supplementation (39 deaths), veld poisoning (246 deaths), plant poisoning *Lantana camara* (102 deaths), *Dichapetalum cymosum* is becoming a threat on some ranches. Other poisonous plants are *Senecio*, *Crotalaria*, *Sarcostemma*, *Urginea*, *Melia*, *Pteridium* and *Cestrum* sp.

ARTIFICIAL INSEMINATION—The number

of inseminations increased by nearly 50% but the total was only 6,086. Dairymen are becoming interested from the point of view of preventing the spread of fertility diseases.

Diagnostic services took up much time, as well as the production and distribution of vaccines. Research work was carried out on vibriosis, contagious abortion, epididymitis and vaginitis, and parasitology. Investigations were carried out on liver fluke and schistosomiasis. Work on snail breeding is being continued.

*Stilesia hepatica* occurs in 95% of sheep livers in Southern Rhodesia and is a cause of condemnation. An attempt has been made to find out the life history of this economically important parasite.—J. A. GRIFFITHS.

Netherlands. (1961). 14e Jaarverslag van de "Stichting Provinciale Gezondheidsdienst voor Dieren in Drenthe" 1 Mei 1959–30 April 1960. [14th Annual Report, Health Service for Animals in Drenthe Province.] [Thijn, J. W.] pp. 115. Assen: Van Gorcum. 3447

TUBERCULIN TESTS on 155,000 cattle revealed 41 positive reactions and 2,221 (1.43%) non-specific reactions; 99.77% of herds were free from TB. Reactors were slaughtered and compensation averaging 354 florins a head was paid. In the previous year's report [*V.B.* 30, 1669] it was expected that the province would be free from BOVINE BRUCELLOSIS in May 1960. The figures for 1st May were: 95.67% of herds free from brucellosis, plus 1.13% having had three negative milk ring tests. Only 0.79% of herds had failed to achieve one negative test. (In 1954, one-third of the herds were infected.) Inoculation of Strain 19 vaccine had almost ceased: 317 calves were inoculated during the year (3,780 the previous year). Figures for the other provinces on 31st October 1960 were also given: on average, 90.4% of Dutch herds

were free from brucellosis. In the Netherlands as a whole, compensation had been paid on 6,300 reactors that were slaughtered during the year, although 11,600 had been ear-marked as qualifying for compensation.

Between 1954 and 1960, 71 male GOATS were examined for suitability for breeding and 23 were rejected, mainly because of underdevelopment.—R.M.

Netherlands. (1961). Veertiende jaarverslag (1 mei 1959 tot en met 30 april 1960) de Provinciale Gezondheidsdienst voor Dieren in Zuid-Holland. [Fourteenth annual report of the Livestock Health Service, South Holland.] pp. 47. Gouda: Gezondheidsdienst voor Dieren. 3448

For the 13th annual report see *V.B.* 30, 4106. TUBERCULIN TESTS on 277,800 cattle in 12,000 herds revealed 925 reactors which were slaughtered: TB. was proven in 114 cattle from 75 herds (compared with 289 from 127 herds the previous year). The proportion of herds that gave three or more consecutive positive ring tests for BOVINE BRUCELLOSIS rose from 61.8 to 69.2%; 6,698 herds were declared free from brucellosis (4,629 the previous year). Only 20,500 heifer calves were inoculated with Strain 19 (27,000 the previous year). Re-infection was recorded in 128 brucella-free herds, in 41 of which there was an "abortion storm". BOVINE INFERTILITY was investigated in 71 herds. Vibriosis was diagnosed in three. No case of trichomoniasis was found. Bacteriological examination of 112 samples of vaginal mucus revealed haemolytic streptococci in 54, *C. pyogenes* in 7 and *pyogenes* plus streptococci in 2. ARTIFICIAL INSEMINATION was performed on 205 pigs (162 sows and 43 gilts) between October 1958 and October 1959. After the first insemination 45% conceived. The total conception rate was 64.5% (70% of sows and 44% of gilts).—R.M.

## BOOK REVIEWS

Bain, R. V. S. (1961). **Haemorrhagic septicaemia of cattle and buffaloes; a laboratory manual for livestock development and improvement.** pp. viii + 65. Bangkok: South-East Asia Treaty Organization. 3449

This booklet is an up-to-date summary of research on haemorrhagic septicaemia, and is designed as a practical manual for laboratories producing vaccine against the disease. There are sections on typing, antigens, serological tests, cultivation of the organism, operation of

a vortex aeration tank, and production and testing of vaccines. A bibliography of about 50 references and photographs of laboratory equipment are appended.—M.G.G.

Cunningham, C. H. (1960). **A laboratory guide in virology.** pp. xii + 173. Minneapolis, Minn.: Burgess Publishing Company. 4th edit. \$3.25. 3450

As the author states in his preface, the primary purpose of this book is student in-

struction, it is not intended to be a handbook of virology. Nevertheless it gives a clearly written and concise introduction to many of the basic principles and techniques used in medical and veterinary virology.

The book covers a wide range beginning with a section on laboratory equipment, and methods of storage and collection of specimens. Subsequent sections deal with the cultivation of viruses and rickettsia in animals, embryonating eggs and in tissue culture. A brief account is given of the cultivation of bacteriophages. Basic serological procedures are described and theoretical foundation of each test is simply explained. The procedure for estimating the LD<sub>50</sub> by the method of Reed and Muench is demonstrated by examples.

There are short sections on immunology, pathology and also of physical methods commonly employed in virology. The principles of centrifugation, electrophoresis and electron microscopy are succinctly explained and serve as an introduction to the study of more advanced texts.

A feature is an account of the methods employed in the classification of viruses and rickettsia and a comprehensive classification is included. There is a bibliography of 103 references covering most aspects of virology and subjects related to it. This is a useful guide to the more detailed study of any of the topics discussed in the text.

The price of the book is very reasonable and its ring binding makes it convenient for laboratory use. This book can be recommended to anyone interested in virology and the methods used by virologists. It is unfortunate that so few courses of the type it is designed to supplement exist in Gt. Britain.

—B. A. BALDWIN.

Barnet, A. J. G. & Reid, R. L. (1961).

**Reactions in the rumen.** pp. viii + 252. London: Edward Arnold. 40s. 3451

This well produced book of eight chapters and author and subject indexes begins with an account of the structure and development of the rumen, its microflora and fauna, followed by the methods used in the experimental investigation of rumen function. The succeeding chapters deal with the metabolic pathways used by the rumen micro-organisms to convert the constituents of the diet into fatty acids, polysaccharides and nitrogenous compounds before absorption and utilization by the animal. The importance of minerals, vitamins and antibiotics is considered in detail.

In dealing with the causation of ketosis the authors might have underlined the paucity of experimental evidence for the oxaloacetate deficiency theory and the need for more knowledge of the pathways of glucose synthesis in ruminants. Mention of the importance of thiaminase in bracken poisoning of the horse would have emphasized that the mechanism of the condition in the ruminant is different and is a subject for further research. It would also have been informative to consider whether there was sufficient evidence to group the bacterial inhabitants into true rumen flora and those present as chance additions as a result of ingestion.

These are minor criticisms and do not detract from the value of the work which is to be regarded as a useful collection of information on the reactions of rumen organisms and the significance of these reactions to the whole animal. The book is complementary to a recent monograph on metabolism in the rumen [*V.B.* 29, 3343].—E. J. H. FORD.

Nassal, J. (1961). Experimentelle Untersuchungen über die Isolierung, Differenzierung und Variabilität der Tuberkulosebakterien.

[**Experimental studies on the isolation, differentiation and variability of tubercle bacilli.**]

pp. 83. Berlin (& Hamburg): Paul Parey. DM 12. 3452

After a discussion of the literature the author's findings are described in three main sections. In the section on methods of isolation of tubercle bacilli there are, among others, chapters on examination of material, use of solid and liquid media and influence of exchange of gases between culture vessel and environment on growth and pigment formation of cultures. The section on differentiation of tubercle bacilli contains chapters on growth characteristics and morphology, change in pH during growth, addition of tuberculostatic substances, formation of nicotinic acid, allergic and serological methods and inoculation of laboratory animals. The third main section deals with transformation by passage in rabbits and fowls of human and bovine type tubercle bacilli and of saprophytic mycobacteria into avian type tubercle bacilli. This appears to support the theory that species of the genus *Mycobacterium* are all variants developed by adaptation to specific hosts and environments. References listed number 227. There are summaries in English, French and Spanish. Paper, print and colour plates are of very good quality.—E.G.

Mackenzie, P. Z. & Simpson, R. M. (1961). **The African veterinary handbook.** pp. xi+297. Nairobi: Sir Isaac Pitman & Sons, Ltd. 3rd edit. 25s. 3453

This useful book has been brought up to date by the addition of sections on ketosis, leptospirosis, hypomagnesaemia, ondiiritis (transmissible petechial fever) and vibriosis in cattle, virus hepatitis in dogs, and hexoestrol treatment of fattening bullocks. Some sections have been revised, and new methods of treatment of diseases have been added. The names of several disease agents are not spelt in the recognized manner, for instance *Clostridium chauvei* [chauvoei], *Cl. septicum* [septicum], *Salmonella enteritidis* var. *dublini* [dublin] and *Vibrio foetus* [fetus].—M.G.G.

— (1961). **The scientific basis of medicine: Annual Reviews 1961.** pp. xi+342. University of London: The Athlone Press. 40s. [British Postgraduate Medical Federation.] 3454

This work is the first of a new series of the annual volumes previously published under the title "Lectures on the scientific basis of medicine". Of the 20 papers, those of special interest to veterinary readers are Immune cellular reactions, by R. G. White; Fever and pyrogens, by G. Pickering; The biochemical response to injury, by H. B. Stoner; Liver failure, by S. Sherlock; and Liver regeneration, by R. D. Harkness.—M.G.G.

Broda, E. (1960). **Radioactive isotopes in biochemistry.** pp. x+376. Amsterdam (London, New York & Princeton): Elsevier Publishing Company. 57s. 3455

An introduction to the methodology of biochemical work with labelled atoms. Half this book deals with the principles of the method, and the other half with the application of these principles to specific biochemical problems, in particular those of intermediary metabolism. No attempt is made at detailed description of methods and applications, instead topics are discussed and a more than adequate list of references provided to replace laboured detail. Thus in a short space it explores adequately the many facets that this subject presents, and at the same time remains eminently readable. Chapters are included on radiochemistry, radiation chemistry, isotope effects, and radiosynthesis. A twenty-page chapter on absorption and excretion of ele-

ments, with 350 references, is particularly well conceived and useful, and another particularly good chapter is devoted to the application of radioactivity to the analysis of living matter. A prominent feature is the prodigious list of over 3,000 references from journals of various countries including Russia. This translation from the German edition has been worthwhile.—M. K. LLOYD.

Park, R. D. (1961). **Animal husbandry.** pp. xii+244. London (New York & Toronto): Oxford University Press. 18s. 3456

This book is intended primarily for students in Farm Institutes or young persons doing part-time courses in agriculture. The author is Principal of Shropshire Farm Institute. Cattle, sheep and pigs are dealt with and there is elementary information on diseases of these animals. In the section on pig diseases, swine erysipelas is placed under "diseases caused by a virus" while swine fever, which should have appeared under this heading, is not mentioned. The author has written another book on crop husbandry to accompany this volume.—R.M.

Seiden, R. (1961). **Livestock health encyclopedia.** pp. x+628. New York: Springer Publishing Company, Inc. 2nd edit. 3457

This encyclopaedia is intended for owners of farm livestock. It is a companion to the author's Handbook of feedstuffs [reviewed in *V.B.* 28, 4161 (1958)]. In layout and scope it may be described as an American equivalent of Black's veterinary dictionary. It is a useful collection of terms that relate to animal health in its widest sense, as the following sequence of headings from one of the pages will show: mountain laurel, mucilage, mucopurulent, Mucor, mucosa, mucosal disease, mucous membrane, mucus, Muellerius. The definitions of a given term vary in length from a few words to several pages. It is rare to find a book of this kind that is free from errors. Yet the only one that we could find was repetition of the widely held fallacy that pregnant cattle poisoned with ergot often have premature births. Numerous cross-references make it easy to locate a subject. Most of the illustrations are good and the printing is excellent. This is not a "do it yourself" handbook of veterinary medicine but a useful guide for the educated farmer.—R.M.



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As from January 1962, when the increased subscription rate comes into operation, the *Veterinary Bulletin* will contain review articles of the same type as are now published in *Veterinary Reviews and Annotations* which will then cease publication. The amalgamation of the two journals will not lead to any reduction in the number of abstracts, nor is it the intention to reduce the number of reviews.

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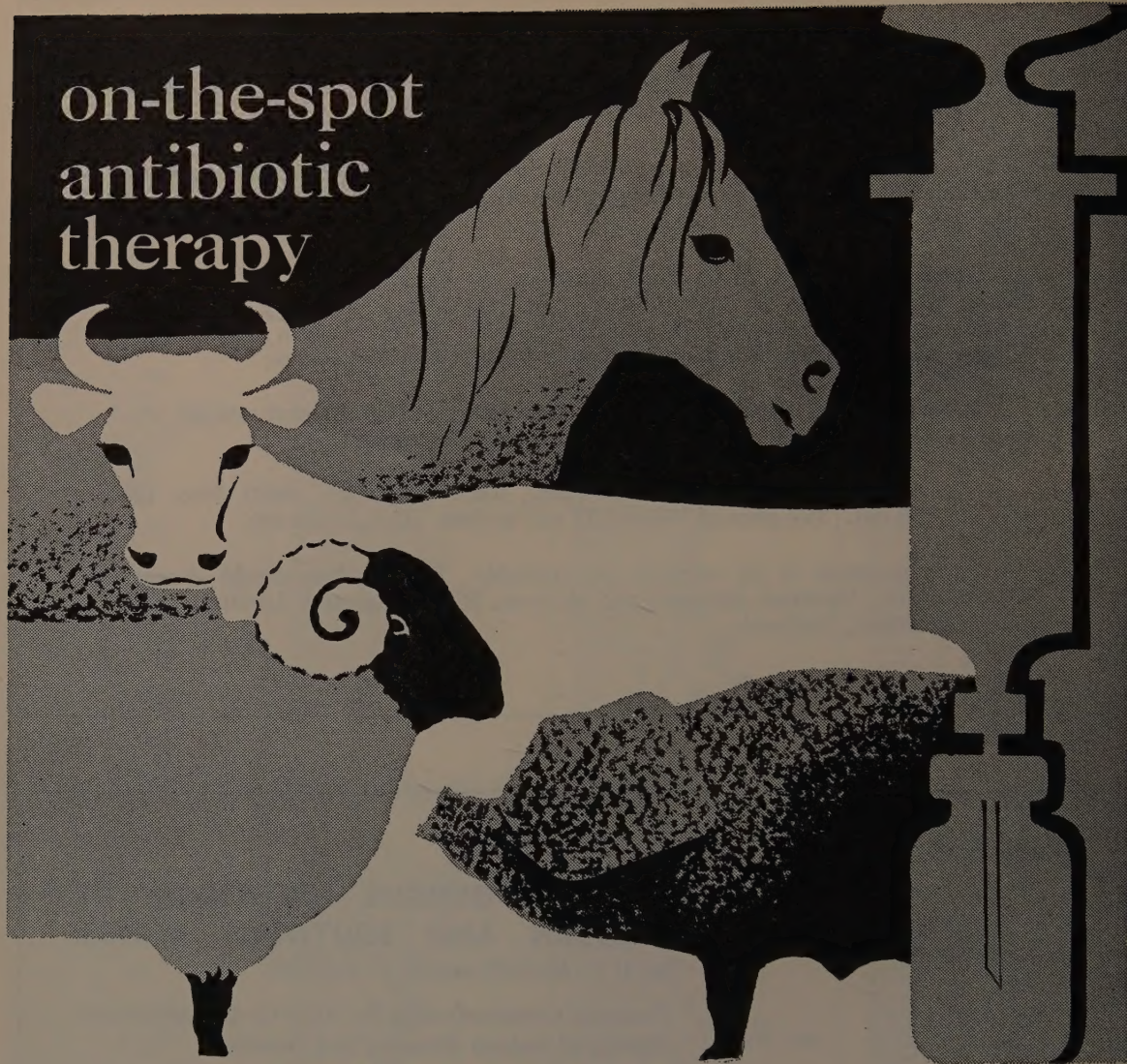
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